Industrial Finishing

An Independent Publication Devoted To The Finishing of Industrial Products

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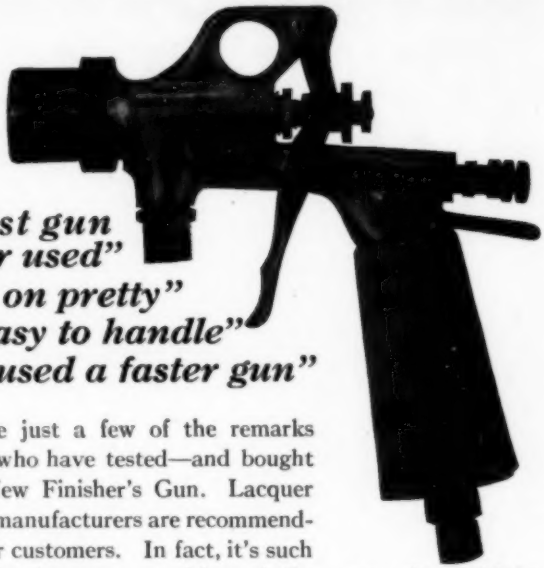
Matthews New Finisher's Gun



"the best gun I ever used"
"lays it on pretty"
"sure easy to handle"
"never used a faster gun"

These are just a few of the remarks from people who have tested—and bought Matthews New Finisher's Gun. Lacquer and varnish manufacturers are recommending it to their customers. In fact, it's such a good gun for lacquers, varnishes, shellacs, etc., that finishers everywhere immediately want it.

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St. Louis, U. S. A.

MATTHEWS MECHANICAL PAINTING EQUIPMENT

Finishes That Endure

Consulting Engineer on finishing problems describes his experience with a metal "striping filler," and calls attention to the requirements of protective coatings that will endure when exposed to the elements

By Wm. J. Miskella, M. E.

TIMES have changed. Way back in 960 B. C. it was nothing out of the ordinary to apply 30 or 40 coats of material to an article requiring a finish. As the years rolled onward the number of coats decreased, and now it appears to be the sole ambition of all those connected with the finishing industry to some day be able to do a high class job in one coat. In general, it is doubtful if this goal will ever be reached for the simple reason that it is exceedingly difficult to make one coat of finishing material perform several superlative functions, without slighting one or more of them.

For example, the first thought that one should have in applying a coat of material to a metal surface, probably would be to use something that would adhere—not only adhere to the metal surface for a week or a month, but to stay there for years.

A Strange Material

An interesting sample of a very strange material came into my office last week. It is a black compound that is supposed to fill a depressed line on a stamped steel plate. Before the art of metal manufacturing had progressed to its present high plane, it would have been necessary to stripe this plate with a black stripe. That would have meant that the a critical eye could detect that the stripe had been hand-applied. Now, metal working machinery mechanically introduces this line while the plate is being made. Then, the filling in of this line produces an extremely uniform job.

The sample of filling material, referred to above, will not adhere to the metal at all. The fact that it seems to serve the purpose is due apparently to the rough surface of the depressed groove in which it is placed to make the line appear black. The filling material dries in less than 15 minutes after being applied. It is of a very uniform body and very heavy. Apparently, it never settles or separates out while in the original container.

A sample of the material, placed on a smooth metal plate and allowed to dry for a few days, produced a very, very hard coating that flew off in large pieces when struck lightly with a screw driver, indicating that there was no adhesion whatever. What was this material made of? China wood oil, high-test gasoline, asphaltum, a black pigment and a goodly quantity of japan drier. Obviously, the latter item gave the material its properties.

The method of applying it is to brush on a little and let it stand for a few minutes, after which the surplus is removed with a cloth. Given time on a flat surface to see what it would do, this material would not have any more

adhesion than the ice that collects on windows in winter time. Practically all finishers realize that a very small amount of drier per gallon—say a few tablespoonsful—is sufficient to accomplish drying, so that when one uses an excess of say 30 per cent drier in a certain compound, he is sure to kill any adhesive properties that it may have had to start with.

In the past many things have been coated with paint materials of a grade very little better than what is referred to above; agricultural implements, cream separators, fire-alarm boxes, electric-light poles, etc. It does not require much imagination to realize what folly it is to expend a certain amount of labor in applying material of this nature, only to find a short time afterwards that the work must have another coat.

Among the greatest offenders in this respect, are the painting contractors who are awarded contracts to paint railroad bridges, viaducts and the like for railway companies and municipalities. The contract, to begin with, is usually given out on a highly competitive basis and those who bid know in advance that they haven't much chance to get the job, when it comes to figuring good material and proper cleaning of the surface before application. The lowest bidder generally gets the job and the customer usually gets the kind of a job that he is paying for.

What R. R. Cars Reveal

Notice the railroad cars you pass at the sidings as you travel. Consider the reputation of the companies whose names appear on the various cars. Look up their financial standing and their dividend paying ability. Look at the finish closely and note the freight cars that are rusty, chipping and peeling. Examine the cars, if you have time, for somewhere on each car the date is given to show when the car was either originally painted or repainted.

There is a wonderful lesson for those who are interested in the study of paint-life on a wooden box car or on a steel coal car, for example. In the first place, the car goes all over the country, and is subjected to all kinds of weather, climate and chemical conditions. This might mislead the reader to believe that these conditions are very severe, and that the results recorded on these large traveling test bulletin boards indicate that it does not pay to use good paint.

Apparently, this is the attitude of some of the men responsible for placing the painting business, but it is not as material as one might at first suppose. To prove this, note the name of some box car or coal car that seems to fit into this part of the argument. Remember its looks and then take the trouble to examine that same company's bridges and viaducts; these do not travel around the country. They are not subjected to all the changes and conditions mentioned, but this you will find: The railway company that has poorly finished rolling stock invariably has poorly finished line and yard equipment. Its bridges and buildings are just as shabby as its box cars.

Two things are at the bottom of it all. The quality of the paint used, and the ability of this paint to adhere to the surface. With labor as the greatest factor to be reckoned with in paint application, is it any wonder that we

see so much railroad equipment, city property and municipally owned plants in such ill-repute—rusty, delapidated and decaying?

A Lesson in Finishing Room Fire Hazard

I have often wondered if the average finisher foreman fully realizes the extent to which he is under obligation to use every possible precaution in warding off the ever present fire hazard. The conclusion I have reached after many years in and around finishing rooms is that very few finishers give more than a thought to the dangers to which their departments and their jobs are exposed.

My experience goes back to the time when very few factories were lighted with electricity—in the days of the oil lamp. Even in those days very few finishers seemed to realize the dangers to which finishing rooms were always exposed.

I recall the case of a man who was lighting his lamps one evening. He had but one match, and that went out before he had the second lamp lighted. Picking up a shred of cotton waste he applied it to the flame of the one lighted lamp. The cotton, being saturated with oil, immediately burst into flames which enveloped his hand. He dropped the flaming material among some other inflammable stuff, and in much less time than it takes to tell it a table was all in flames.

This happened in the days before the foam type of fire extinguishers. The chemical was in sealed bottles arranged along the window ledges and on shelves. I was but a boy at the time, and I recall making inquiries about those bottles—what they were for. No one seemed to know exactly. Finally I had asked the foreman about them and their use.

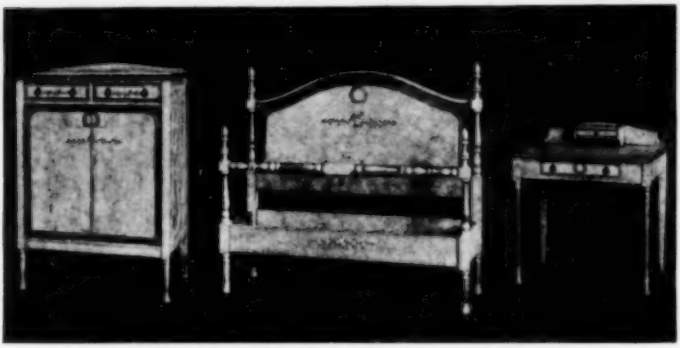
When the fire started and the men's efforts to beat it out only scattered it more, I thought of those bottles. I made a mad rush to get to them, only to find my way blocked by a lot of stock which had been piled immediately in front of the space. For a moment I hesitated, but only a moment; my mind worked rapidly. To climb over this pile of stock was impossible. To remove it a piece at a time and not be too late was equally so. To throw the pile over would mean great damage, but not to do so would mean complete destruction of the factory with all the stock.

With an effort born of desperation I heaved the pile over and scrambled to the place where the bottles rested on the window ledge. Gathering as many as possible in my arms I rushed back and hurled them one at a time into the flames. As the bottles broke and their contents spread I had the satisfaction of seeing the flames gradually subside. The factory was saved, and so were our jobs.—A. C. Ellingboe.

Akron Varnish Co. to Make Industrial Lacquer

The Akron Varnish Co., announces the establishment of an Industrial Lacquer Dept. at their Detroit factory in charge of Dr. S. F. Dimlich.

Dr. Dimlich is a graduate chemical engineer of Bucknell University, vice-president of the Chemical Engineering Alumni Association of that college, member of the American Chemical Society, and has contributed articles on lacquers and lacquer enamels for the trade papers. He was formerly connected, at different times, with the Zapon Co., the Welsbach Co., and the Paint and Varnish Division of the Pittsburgh Plate Glass Co.



Stippled Bedroom Furniture by The H. Lauter Co., Indianapolis

Modern Stipple Finishes

Revealing methods of using different types of materials to produce the new stippling finish which is so popular for decorating electric-light fixtures, furniture, lamp bases, radio horns, caskets and many other articles

By T. E. Moorefield

STIPPLE finishes are now quite in vogue for producing very unique and pleasing effects on all sorts of articles. Lighting fixtures lend themselves admirably to this form of decoration. For example, wall bracket fixtures may be finished in a smooth metallic or lacquer finish, the arm of the bracket which supports the lighting socket being done in stippled effect, with a pleasing shade of bronze powder antiqued with a mist coat of a harmonizing shade of lacquer enamel or with a japan color which has been wiped off while wet, so as to expose the bronze powder coat on the raised portions.

Ceiling brackets and chandeliers are also finished in this stippled effect, judiciously combined with proper blends of bronze powder, lacquer enamel or japan color. Some very beautiful finishes can be produced economically by this method since plain, level surfaces can be made to imitate practically any design of hammered or wrought metal, and the roughened surface naturally lends itself to very elaborate decorative schemes.

Roughened Surfaces

As may have been surmised from the above statements, the stippled effect is one which leaves the surface slightly raised in uneven spots, which by proper manipulation can be worked into practically any desired design. The variety of surface effects and colors are as unlimited as the versatility of the man who is applying the material.

Everything from wrought iron to hammered gold, silver or brass can be imitated almost to perfection, according to how heavy the material is applied and according to the design and roughness of surface left in the stipple material at the time of application. The uneven surface lends itself wonderfully well to high-lighting, antiquing, shading, frosting and blending in a large number of color effects.

Metal Effect on Wood

For some time this stipple effect has been used by makers of coffins and caskets to transform plain soft wood boxes into works of art that very closely resemble the highest quality of antiqued and burnished metal.

Wooden bases of parlor, piano, bridge and floor lamps were also finished in it to give very beautiful metallic finishes, highly decorated with colors. Now the same material is being used to transform plain iron pipe into works of beauty on the so-called junior bridge lamps. It is also used quite extensively for decorating table lamp bases, candle sticks and similar objects.

Radio horns made of compressed fibre or of rubber compounds are finished with stipple materials, followed by a coat of black lacquer enamel to give a finish that closely resembles the finest of pebbled leather. Advertising novelties of both wood and metal are finished with stipple materials.

New Furniture Stippled

The stipple finish has also invaded the furniture field. Borders around tables, decorative panels and drawer fronts and similar portions of furniture when finished with the stippled effect give very pleasing results. The newer designs of furniture practically all call for a touch of color, in addition to the natural grain of the wood, and stipple finishes can be used admirably for this purpose.

Some of the new designs along Spanish lines call for an extensive use of grill work, which is often finished in a wrought iron effect. One furniture manufacturer designed such a dining room suite and was dumfounded at the cost of genuine wrought iron grill work with which to decorate it.

After a series of experiments he found he could make the grill of wood, apply a stipple coat to give the wrought iron texture, and a coat of black lacquer over it to give a finished appearance which very closely imitated wrought iron, at less than one-tenth of the cost. This only serves to illustrate the wide variety of uses of such materials.

Two Types of Material

Two types of materials are used for producing this stippled effect, both of which serve only to give the rough surface. They can be applied directly to wood, iron, brass, composition or other surfaces, or a primer can be used next to the bare surface, if desired. Either paint, varnish or lacquer finishing materials can be applied in any colors desired directly over the stipple material, and the size of the stipple can be manipulated according to the fancy of the user.

Using Paste Paint

The oldest type of stipple material is a paste paint product made of the proper combination of oils, varnishes and pigments to give the desired properties. In appearance it is somewhat similar to a sanding surfacer or the "rough stuff" for use on automo-

bile bodies. It can be applied with a putty knife where an extremely heavy coating is desired, or it can be reduced with turpentine or naphtha and applied by either brushing or spraying.

Where the spraying method is employed, it is advisable to use a rather large opening in the spray gun nozzle. Better results can be obtained by spraying from a gravity feed or pressure-feed container than from a cup gun. Considerable pressure should be used on the material to force an adequate supply of it to the nozzle of the gun.

After a sufficiently heavy coat has been applied, either by brushing or spraying, and while the stipple paste is still wet, the desired roughened effect should be produced by stippling the paste with a stiff-fibered brush, or with crumpled-up cheese cloth, or with a sponge or with whatever medium that best produces the desired roughened effect.

If large stipples are wanted the stipple paste should be applied in quite a thick coat, and the rough effect produced by twisting a brush in the paste, or by some similar means. Where a finer, smoother stippled effect is wanted the paste should be put on in a thinner coat and stippled by pouncing with a rather large, stiff bristled brush.

In any case, after the desired roughened effect has been produced, allow the paste to dry overnight. Then sand off the sharp edges of the raised, stippled effect with rather coarse sandpaper, using no water or oil as a lubricant. Then spray or brush the desired paint, varnish or lacquer bronze coat or enamel in the regular way, applying as many coats as may be necessary to produce the desired colored effect, and allowing each coat to dry hard before the next one is applied.

Antiqued Effects

Antiqued or shaded effects can be produced by applying harmonizing or contrasting colors and wiping them off before they dry, so as to allow the base color to show through on the raised portions. Or, different colors can be applied by spraying so as to give shaded or blended effects. Very pleasing results can often be obtained by spraying one shade at an angle from one side of the work and another shade from a different angle, so the finish has a variegated or changeable appearance as it is viewed from different angles.

Stipple paste of this type can be used very successfully for architectural decorations on wainscotings and similar surfaces, to produce extremely pleasing results as well as for decorative effects on coffins, lamp bases, furniture, novelties, and so forth. Specially-designed figures can be molded or impressed right into the paste to form any kind of design that may be wanted, such as outlines of flowers, leaves, diamonds, circles and so forth.

Lacquer Stipples

The second type of stipple material is made on a nitro-cellulose or lacquer base, in such a manner as to have little flowing properties after it has been applied. It can not be brushed or knifed on, but must be applied by spraying. Two grades are to be had, one to flow out slightly and give a rounded, smooth stipple effect and the other to give a sharp, elongated stipple. No reduction is required before applying, else the non-flowing properties which give the

stippled effect are likely to be lost.

Spraying Lacquer Stipple

In applying stipple lacquers a wide opening should be used in the nozzle of the spray gun. Very low pressure—only 15 or 20 lbs. —should be used on the nozzle of the gun, and considerable pressure, either by gravity or force feed, should be applied on the material. A suction cup spray gun cannot be used successfully for the material is too heavy in consistency to be easily lifted by suction.

Care must be taken not to atomize the material too finely, or the stippled effect will be lost. It is advisable to shut off all the air from the horns of the gun. This allows the material to be forced out in little chunks which are not atomized or broken up finely before they strike the work; this gives the desired stippled effect.

Various sizes of stipple can be produced by regulating the quantity of material flowing through the nozzle, the air pressure, the distance of the spray gun from the work, and the amount of material applied, but it is not possible to get as extremely large designs with stipple lacquer as can be obtained with stipple paste.

The coat of stipple lacquer should dry at least an hour (preferably longer), after which without any sanding operation the succeeding coats of bronze powder or of paint, varnish or lacquer enamels, can be applied in the regular way. High lighting or shading can be done in a manner similar to that described under stipple paste, after the base coats have been applied over the stipple coat.

Spray Equipment News

According to information supplied by the Spray Painting & Finishing Equipment Sales Co., 60 High St., Boston, Mass., one of the latest and most important inventions within the art of spray painting is the Lobster Claw Attachment, which enables the spray operator to include every line within the architectural and industrial finishing fields.

Spray gun with Lobster Claw Attachment

This little auxiliary makes possible the cutting in of all kinds of interior woodwork, while two-color work, in such products as automobile bodies and furniture, can be completed without masking, and any desired surface can be protected.

The accompanying illustration shows a "Sprayco" gun equipped with this remarkable device and all attachments necessary to do all or any part of painting heretofore performed by the bristle brush. The device is removable and completely adjustable for any service desired.

More French Chamois

James H. Rhodes & Co. have made arrangements by which the output of three of the largest factories of France has been nearly doubled and they will put on the market their well known Bordeaux line of chamois at prices only slightly in excess of the ordinary domestic tag-shape skins. The superior quality of the French chamois is well known.

Finishing Simmons Steel Springs

Chief Chemical Engineer of the Simmons Company describes economical production methods for applying quality finishes on high grade bed springs

By E. W. McMullen

THE assembling of Simmons bed springs is done on a moving belt along which each man does his particular operation; this insures greater accuracy and speed. The frame is riveted together by automatic riveting machines and this is placed on the belt. As it moves along each man does his work by placing a certain number of coils in position, putting on cross helicals, clamping on the border wire, etc. At the end of the belt travel the spring is complete, and after final inspection ready for the finish. These belts are timed to deliver a spring a minute, and the total capacity of the plant at present is 15,000 per week.

There are two types of finish, black and gray, which are applied in a different manner.

Water Japan—Black

The black is what is called water japan, a special product which contains the japan solids in an emulsion with water. It requires special methods of application, but has many advantages to more than offset the difficulties. The springs are hung on carriers which are hoisted by an elevator into a kiln heated to about 550-degs. F.

The kiln is a special-type indirect oil-heated chamber through which a large volume of pure heated air passes. This tremendous heat does several things. First, it burns the oil and grease from the metal; second, it tempers the Premier wire coils to exactly the proper point for greatest resilience and longest life, and third, it brings them to the proper heat to obtain a coating from the water japan, as cold metal receives practically no coating.

After passing through the heat for 20 minutes to accomplish the objects described above, the spring carriers come to a slot in the kiln through which they are dropped down into the tank of water japan. The heated spring instantly collects on itself a heavy coating of japan, while a cold spring would not collect any. It is hoisted back into the kiln and continues its travel through the kiln for another 20 minutes at 500-degs. F. to complete the bake.

The resulting coating is very hard, tough and brilliant. The wires are completely covered without runs or drips. It is one of the most resistant finishes which can be put on steel.

Gray Enamel Finish

The gray finish is of a different nature, as japan can only be made in the black. This gray enamel was developed at the Simmons Co. to produce a hard, tough, lustrous gray coating in one operation, and it has been very successful. For this finish the springs are tempered in a separate kiln, as they must be cool before being dipped in the

gray enamel—just opposite to the condition for water japan.

The tempering, and burning off the grease and oil are accomplished in about 20 minutes at a temperature of 500-degs. Fahrenheit. The springs are then pushed along a track and are down to room temperature when dipped, (automatically of course) in the 1,000-gal. tank of enamel. They then move along over a drip board; then they are hoisted up in a tunnel kiln about 90-ft. long through which pure heated air travels. They move through the kiln in about an hour and a half, and are thoroughly baked in that time at a temperature of about 300-degs. F. The result is a fine, lustrous, enamel finish—almost as tough as the japan, which stands up wonderfully well under abuse of all kinds.

The finished springs are compressed before shipment to make weight in a car. Two or more springs are placed back to back; wooden grids are placed on either side and the large press slowly squeezes the springs up tight. The wooden grids are then wired together and a compact package is formed, occupying about half its original volume. Springs are then ready for shipment.

Enameling Kitchen Cabinets

Strong competition in kitchen cabinets demands that a good enamel finish be made on these at the lowest possible cost. The first essential to a good finish is a good foundation. There is nothing I know of that will give a better foundation for an enamel finish than shellac, provided the finish will not come in contact with extremes of temperature nor dampness. A good coat of shellac, on the bare wood, seals the pores and prevents the wood from absorbing the binder from the undercoater; at the same time it makes a smooth surface for succeeding coats.

Apply the shellac freely, at a cut of not less than 3-lbs. to a gallon of solvent; for some woods a little heavier solution would be better. When the shellac is dry, sand with fine sandpaper, dust well, and the surface is ready for the undercoater.

With a good foundation, such as shellac provides, the succeeding coats have nothing to do except give the correct color. Kitchen cabinets are usually finished in white to match the enameled walls and woodwork of the kitchen. Occasionally, kitchens are done in pearl gray, or some other delicate tint that is darker than white, and accordingly, a cabinet to match is desired.

Some finishers, when making a colored enamel finish, tint the last coat of undercoater only. I believe in tinting all the coats to the same depth of color as is required in the enamel. This gives a more solid color, with less material than otherwise would be obtained.

Kinds of Wood to Enamel

Manufacturers of kitchen cabinets should select the wood carefully, and give the finisher a chance. Open-grain wood, such as elm and ash, should not be used where an enamel finish is desired. These woods are all right when they are to be finished natural, or in imitation of some more expensive wood, or in any finish where it is desirable to have the grain showing. When they are to be finished in enamel the open grain has to be filled, and this adds greatly to the cost of finishing.

Basswood, white pine, poplar, and other close-grained woods are comparatively easy to finish in enamel. Birch also is a good wood on which to put an enamel finish. Some finishers consider it a better wood than the others, because it is harder and holds the finish out better.

A good surfacer, or first-coater for enamel can be made from undercoater, by adding an additional quantity of binder. It is usually a good plan to be advised regarding the kind of oil used in making the undercoater, as the oil added may be different from what is already present, and the two may not work well together.

As a rule, pure linseed oil will work well in an undercoater, when it is to be used as a first-coater. One pint of oil to a quart of undercoater will make a good first-coater. The oil will slow the drying somewhat, so that an additional 24 hours, at least, must be allowed for drying. Of course, if one has a drying room, the matter of drying is easily handled and the drying time greatly reduced.

Enameled kitchen cabinets are generally left in a gloss finish, and as they are not usually rubbed it is well to keep them smooth and clean from the start. This can best be done by sanding each undercoater with fine sandpaper. If more than one coat of enamel is applied, rub all but the last coat with steel wool.—J. C. Tilden.

New Wood Stain

Master painters of the two Dakotas, in session at Fargo, N. D., recently, were told of a discovery of new wood stain derived from lignite, a coal which underlies North Dakota. Prof. Leonard P. Dove, of the geological department of the University of North Dakota, accidentally found the new chemical which gives a dye suitable for coloring.

The stuff is to be manufactured on a commercial basis in a small plant at Minot, N. D. It is called Dakalite and is made from the slack, the weathered or oxidized lignite, that heretofore has been thought without value. Erosion has produced great beds of this slack in the state in exposed seams.

At first the thick and jelly-like substance was thought to be a petroleum product. It was tar-like, gelatinous, brownish-dark material. It did not contain oil. It was found a chemical curiosity, a natural mineral, perfectly reversible colliod with unusual properties.

Dakalite is to be a very dark brown powder, about the consistency of coarse ground coffee. Mixed with water it produces a wood stain, suitable for all kinds of wood. It is particularly valuable for oak and mahogany stains on birch, oak or walnut, as a water soluble dye.

If this material works out, it means a reclamation of what promised to be a great waste in the state, which is just beginning to commercialize the sale of its lignite coal beds.—Paint, Oil & Chemical Review

Felts For Finishing

James H. Rhodes & Co. announce an increased equipment added to their felt factory at Jersey City for the further production of certain sheet felts. This concern has been manufacturing, for some time, sheet felts particularly adapted for the painting and finishing trades, as well as felt wheels for the metal industries. The additional equipment will enable them to provide for further trade along these lines as well as certain new uses which are being developed.

Lacquer Used in New Skyscraper

In an article in the "Pacific Coast Architect," a member of A. Quandt & Sons, painting and decorating firm in San Francisco, tells about the use of lacquer for finishing the wood and metal trim of a 26-story building.

By Geo. E. Covell

ONE of the important problems which the architects of the new Coast Division Building of the Pacific Telephone & Telegraph Co. were called upon to solve was that of the decoration of the interior. Time was an essential factor, yet the finishing of the miles of steel trim used in the great building, including metal windows, door casing and base and hundreds of walnut and oak hardwood doors with holly and ebony inlay must be richly decorative, easily cleaned and permanent.

Since much wood, iron and metal work exclusive of that used in buildings had for years been finished with lacquer and as several of the newly constructed buildings in Eastern cities were reported to be finished with this old material used in this new way, a searching investigation of the possibilities of lacquer was decided upon.

Lacquer Was Investigated

Nitro-cellulose lacquers, a by-product of gun cotton, reduced with amylacetate and fortified by the addition of resinous varnish gums were new so far as the painting contractor was concerned. Samples of all the different manufactured lacquers were obtained and exhaustive tests were begun, pending the time when actual application might be begun. Many of these tests required weeks of careful observation.

Pliable metal, as well as the actual 18-gauge molded steel casings to be used in the Telephone Building were coated with many different metal primers, fillers and lacquer enamels and when dry and thoroughly seasoned, put to the most severe bending, hammering and abrasion tests as well as to exposure tests from the elements. These tests were much more severe than would ordinarily be possible on the usual accepted varnish or enameled finish surfaces.

But even with the information obtained by these exhaustive tests, our organization was not com-

pletely satisfied, so to check up eastern reports and obtain such facts as were available as to the whole problem of the application of lacquer, Mr. Fred Quandt of our firm went East and made a first-hand study. He discovered that at that time, March, 1925, no building of any consequence in the U. S. had been completely finished with nitro-cellulose lacquer and the report as handed in from his observations of eastern conditions was not enthusiastic.

Lacquer Met Requirements

However, our own tests and experiments and the methods we had developed proved so convincing and encouraging to ourselves as well as to the architects and the engineer of the Telephone Company that it was decided that lacquer, under the methods of application we devised, was the only material that could be used successfully under the working conditions in existence: dampness, wind and dust, limited time for drying and for completion of the building.

The strict time schedule adopted was adhered to in every way, a result that would not have been possible except for lacquer, because lacquer thinned to proper consistency, rightly applied with a nicely adjusted spray outfit or air brush upon a firm, hard foundation, sets immediately. Work may be handled within 20 minutes after its application. Volatile thinners used to reduce lacquers, amylacetate or methyl acetate, commonly known to the layman as "banana liquid," evaporates instantly when exposed to the air.

It was discovered in the course of our researches into the whole fascinating subject that lacquers are of many makes and qualities. Like the Irishman's whisky, all are good but some are better than others. The advantages of a quality lacquer are mainly found in its quick setting and drying.

It is possible to apply two or three coats in a day when necessary. Its hard drying porcelain-like finish presents a full, round lustrous coating of great beauty that will stand severe abrasions, and constant washing with strong alkaline solutions such as janitors usually employ. It may be rubbed to a handsome dull finish or polished to a mirror-like surface. Lacquer enamels are available in practically all colors.

Lacquer Possibilities

After completing this large undertaking with this material, it is our belief that lacquer finish has come to stay. While it is true that early failures were reported in the automobile industry, most of these were due to ignorance regarding the character of the material used or carelessness in preparation and faulty workmanship in application.

Just in the last six months, great improvements have been made by lacquer manufacturers in the chemical composition of lacquers. Naturally we feel a certain pride in having had a part, with the architects, engineers and the Telephone Company in achieving results so gratifying, thus blazing a new trail in interior decorative treatment which will be followed by much more widespread use of lacquer for similar purposes in the future.

Other Materials Used, Too

Lest one get the impression from this discussion of lacquer that it is the only material used in the interior of the Telephone Building, it should be stated that

our organization was also called upon to execute a great variety of other work, using the more formal and generally known methods of decoration throughout this structure.

Bold and daring color combinations in the main entrance lobby, extremely decorative use of paint in the highly ornamental cafeteria and decoration of the auditorium and directors' rooms have all been highly praised and offer abundant proof that we do not believe lacquer, useful and beautiful as it is for the purposes for which it was here used, will supplant all materials for all purposes. In decorating of all buildings, paint has its place and so has varnish and enamel and all other materials. But that lacquer will come to be more and more in demand in meeting certain requirements may be confidently predicted.

Lacquer Statistics

According to the Department of Commerce statistics, the production of pyroxylin lacquer for the first half of 1925 was 3,449,500 gallons greater than during the corresponding period of 1924; varnishes and japans had an increase of 1,796,100 gallons; ready mixed and semi-paste paints, 7,326,200 gallons; paste paints a falling off of 2,686,800 pounds. If the paste paint be converted to gallons, the total increase for paint and varnish products is 9,045,534 gallons, against 3,449,500 gallons for lacquer.

In the four years 1920-1924, inclusive, the production of paint and varnish made a gain of about 45 per cent. The injection into the situation of a new element, lacquer, may slow up this rate of progress, but there is nothing in the figures available to suggest that it will be altogether halted, at least not in the reasonably near future. Bear in mind that I am now speaking of the industry as a whole and what is true generally may not apply at all in certain cases.

At present the manufacturing trade is by far the most important from the standpoint of lacquer, taking probably 90 per cent of the production. This large proportion is expained mainly by the practicability and economy of finishing most manufactured articles by the spraying or dipping methods, which are not equally adapted to the painting of structures and to use by the small painter and householder.

Of course, as brushing lacquers are perfected we may reasonably expect a readjustment of the proportions consumed by the different classes of trade.—From a paper read at the annual meeting of Federation of Production Clubs, by W. R. Fuller, Technical Director of Pratt & Lambert, Inc.

The pressure-feed method of delivering material to the spray gun is generally recommended. It provides sufficient capacity for a day's run and better atomizing of the liquid at the gun, because no air is required to draw the fluid from the container.

Lilly Varnish Company Erects Addition

Work has been started on a three-story reinforced concrete addition to the main plant of the Lilly Varnish Co., on So. California St., Indianapolis.

Offices for the company will be established on parts of the first and second floors of the new building. The remainder of the structure will be utilized for storage and in the cleaning, painting and drying of steel drums used by the company to ship its products.

Auto Finish Deterioration

Manufacturers have not entirely eliminated failures in the finish of motor cars, but during recent years they have succeeded remarkably well in decreasing the frequency and extent of such failures

By R. L. Masterson

IT IS doubtful if the time will ever come when absolutely all failures of the finish are eliminated. There are many factors that exert an influence on the durability of a finish, and many of these factors are entirely beyond the control of the manufacturer.

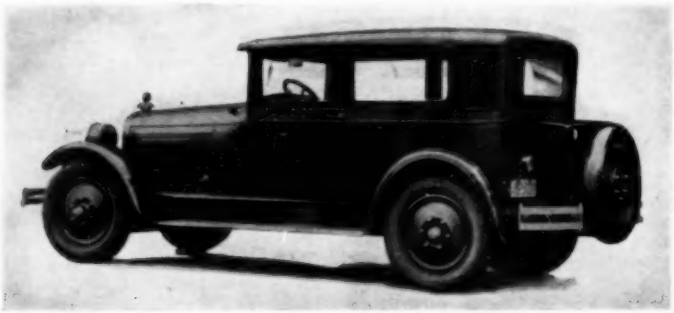
As an example, all the materials used in finishing a job may be of the very best quality, yet the finish will not be permanent if the metal has not been properly prepared to receive the finish, or if the various coats are not properly applied and dried.

Even the best of materials and the best of workmanship may still fail to give satisfaction in the life of the finish if the car owner, either purposely or unknowingly, subjects his car to conditions which are sure to promote rapid deterioration.

Protective Coatings

Consider for a moment why finishing materials are applied to an automobile body. It is evident that there are at least two reasons—for protection and decoration of the bare metal surface. For the time being suppose we neglect the question of beauty, and consider only the question of protection.

Metal surfaces are protected by coats of finishing material in order to prevent the weather and elements from destroying the metal. When these protective coats are applied, they in turn must fight the elements constantly to give immunity to the metal. In carrying on this fight, naturally, the protective coating must be affected to a certain extent, especially when the destructive agencies are so numerous, so strong and so violent that they



would quickly destroy even as hard and durable materials as iron and steel.

This, then, is the reason a finish cannot last forever. It is constantly called upon to combat destructive agencies which seek to destroy the very materials of which the automobile body is made. This is the reason that finishing varnishes and color varnishes are so quickly destroyed.

Now that lacquers and durable enamels have been perfected, they come nearer to lasting forever than any finishing materials heretofore used. They do not deteriorate by checking, cracking or crazing, which were the common forms of deterioration in the old paint and varnish finishing days.

Varnish Failures

In the case of color varnish and finishing varnish, the most frequent cause of failure was due to the top coat or finishing varnish being oxidized more completely than underlying coats with a consequent loss of elasticity. During exposure to rain or other dampness the film of finishing material absorbed moisture, swelled and softened.

Later, upon exposure to sunlight, the outer surface dried first and contracted as it dried, setting up stresses and strains much as when a sheet of rubber is drawn tightly over a surface. If the finish coat was not sufficiently elastic, this strain ruptured it, and caused the formation of checks and cracks through which moisture and the other elements could attack the underneath coats.

Merits of Lacquer

The film deposited by a lacquer enamel on an automobile body is, by nature, much less absorbent and does not soften and dry again upon exposure to rain, as does varnish. Also, since this class of material dries by evaporation alone and does not depend upon oxidation, as does finishing varnish, there is no tendency for the outer film to become harder and less elastic than the undercoats. Consequently, cracking or checking never appears in a lacquer job except in a very few instances where, for one reason or another, the undercoats are not as hard and dry as they should be.

Sun Rays Destructive

The actinic or chemically active rays of sunshine quickly attack a finishing varnish and cause it to turn into a dull, lifeless coat. These same rays have a similar effect on clear lacquers, but when solid-covering, chemically-inert pigments are incorporated in the lacquer film, only the extreme outer surface is exposed to the light rays; the pigment particles shade or protect the under surfaces from the sunlight.

Even Lacquer Affected

After a considerable period of time however, sunlight and moisture will have a slight weathering effect on lacquer, causing, in some cases, a very small amount of powder to form on the surface. This film of powder is so slow in forming that an automobile, which is given reasonable care and washed or polished occasionally, will never show it. When it does form, due to the car being exposed to hot sunlight and to repeated moisture conditions, the film is only of microscopic depth, and by washing and polishing with a mild abrasive polish a new, fresh surface of lacquer film is exposed which is of the same col-

or and pleasing lustre as the car showed the day it was purchased.

Proper Care of Finish

Washing and polishing can be continued over and over again without showing any appreciable effect on the thickness of the lacquer film. By mild polishing every few weeks, and with an occasional washing, the car can be kept looking new during its entire useful life.

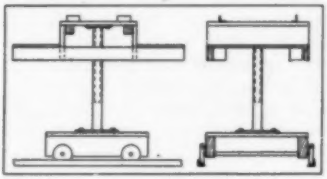
In addition to the effect of the actinic rays of sunlight, a lacquer film is affected very slowly but surely by the friction of particles of dust being blown against it, by the mechanical friction of repeated cleaning and by repeated sudden changes of temperature. In other words, even though a lacquer film is much harder, more waterproof, more elastic and less affected by sunlight than finishing varnish, and will not be affected as quickly as varnish by any of these agencies, yet in time these destructive forces will finally leave their print on a lacquer film.

No finishing material will last forever and through the combined and continued attack of destructive agencies, the surface of the lacquer film will eventually be dulled, but this dullness can be removed by polishing which presents a new film to fight the elements.

Traveling Turntable

In one furniture factory a special turntable has been built and mounted on a four-wheel carriage or truck, which runs in and out of the spray booth on angle iron tracks, as shown in the accompanying drawing. The truck bed is about 24x24-in., and the turntable is 33-in. high.

Angle iron cleats support the material being sprayed. During operation both the turntable and truck bed are covered with paper, the paper on the table being pressed down over the four short angle iron cleats, which in this way hold it in place.



Front and side elevations of turntable, carriage and track.

This turntable can be blocked stationary at any point along the track, or it can be withdrawn from the booth to exchange articles being sprayed, and then advanced into the booth.—C. F. Saidman.

Steel Wool Cuts

Through certain improvements recently made in their manufacturing operations, James H. Rhodes & Co. will shortly issue revised prices on "steel wool," which are considerably below their present prices.

Advance Paint Co. O. K.'d

The decision of the Circuit Court of Appeals rendered Tuesday, Feb. 2, 1926, in the case of the Federal Trade Commission against the Advance Paint Co., Indianapolis, reveals the case thrown out of court and the defendant given a clean bill of health on charges of giving gratuities and other valuable presents to customers and prospective customers for the purpose of influencing them to buy its products. The defendant's attorney did not even address the court.

The fact that the suit was instituted based on an old indictment back in 1918 has caused a number of concerns to assume that the charges were correct, much to the detriment of the defendant and this complete vindication will be the source of much gratification to friends of the company.

SPEED!

Swedish Lacquer

A long step ahead in finish

An oil lacquer for cabinet work that permits fast finishing schedules

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Write for samples and full information

Sun Varnish Company,

INCORPORATED

15th and Magnolia Sts.

Louisville, Kentucky

The originators of SUN No. 115
PALE RUBBING VARNISH

Job Planning and Scheduling

Production Engineer points out how factory management can determine and live up to the answer given customers who demand, "Enter our order, when can you ship?"

By Chas. F. Scribner

WHERE the output of the ideal finishing department is represented by 100 percent, the output of an average finishing room, where workers are often absent, where materials and equipment are not always ready, and where work is not planned in advance, is anything between 40 and 65 percent on the same scale.

Much of this loss can be saved by better pre-planning, by the anticipation of requirements, by not trusting to luck and chance and leaving the difficulties to be surmounted by the department foreman on the spur of the moment. The average finishing room foreman unaided, mistaking as he does strenuousness for efficiency, often does not see these opportunities in his own department, while he might be the first to see them in some other plant.

The principles governing planning and scheduling of work in any finishing department can best be stated by defining what each of these functions does, as follows:

Planning

1. Knowing what to make, the quantities, and the time in which to make it.

2. Seeing that each work-place has a "next job" ready to start before the one in process is completed.

3. Seeing that an order containing all necessary information about the "next job" is at hand and ready for the workers.

4. Knowing that the supply of finishing materials on hand is sufficient to meet requirements of the work that is coming through and that such materials will be ready when wanted.

5. Seeing that spraying machines, brushes, and all equipment is kept in the best possible condition to avoid delay on the part of the workers from these causes.

#270 Dresser Base		48-in.		Fr. Wal.
Operation		Hrs. Ea.	Hrs. 100	Per Hour

Fig. 1—Card 3x5-in. to show record of time required.

Scheduling

1. Knowing the kind and quantity of work that is to be done.

2. Knowing the time to perform each operation on the various items of product to be produced.

3. Knowing the exact condition of each work place or machine with relation to the work going through.

4. With the foregoing facts, determining the time each order will reach the several operations, from the time the work is started in the department until it is completely finished.

5. Following up each order started in the department to see that the schedule, as planned, is

"For sixty years the Murphy Varnish Company has been making varnish. Sixty years is a long time - long enough to test any finish, or any reputation. If the Murphy Company has a reputation for making good finishes, it must be because throughout that sixty years it always tried to make the best it could."

Amazing Quick Drying Materials for Wood Finishing

The Murphy Varnish Company is equipped to furnish manufacturers with a full line of pyroxylin finishes which will enable them to employ these desirable materials throughout the entire finishing schedule of any job.

These materials comprise the sensational Murphy Kauriol Wood Preparation, Murphy Period Finish, Murphy Flat Lacquer, Murphy Clear and Colored Lacquers for both spraying and brushing, Murphy Waterproofing Mixing for waterproofing shellac, and Murphy Pyroxylin White Undercoating.

The use of these materials cuts finishing costs. For instance, new wood finished with one coat of Murphy Kauriol Wood Preparation is ready in twelve hours for a coat of clear lacquer. The ordinary steps necessary to bring a job to this stage would take two days or more and involve four operations.

One manufacturer writes that the use of Murphy Kauriol Wood Preparation has had the effect of doubling the size of his factory! We should be glad to have you write us to send you a practical demonstrator to show you how he can help you save time, storage space and labor costs in your plant.

Murphy
QUICK DRYING Finishes

MURPHY VARNISH COMPANY
NEWARK · CHICAGO · SAN FRANCISCO · MONTREAL

PROGRESS OF WORK BOARD

ORDER No.	STAIN	SAND	FILL	SHELLAC	VARNISH

Fig. 2—Copy of top of board for following up work in progress.

maintained and that work moves forward to completion without delay.

No extended explanation as to planning, as it is outlined above, is required. The progressive and wide-awake foreman will recognize that action, intelligent and sustained, is necessary on his part to carry out the responsibility of his position. To the extent that he measures up to this responsibility, is his department brought nearer the 100 percent effectiveness of the ideal finishing room.

It is assumed that orders come to the foreman of the finishing department specifying what is to be done, the quantity to be made, and the finish that is required. To secure the time necessary for performing each operation in the finishing process, 3x5-in. ruled cards are made out, following the example shown in Fig. 1. The time is entered as hours per unit, hours per 100 units, and units per hour.

The Progress Chart

In several plants, effective scheduling of the work in the finishing department has been met by the following program: A progress chart is used, based upon the railroad block signal system, where one color represents a clear track, another color a train in the block ahead, and a third color a train in the second block ahead.

The chart is made of heavy cardboard and divided into spaces each of which contains small nails upon which are placed tags indicating the progress of the work on the various orders, see Fig. 2. The tags are green, red, yellow and white. A white tag hung in any space indicates that satisfactory progress is being made on that order; green indicates that a specific operation is not necessary on the order in question; red indicates that the work has not yet been started; and yellow indicates that the work is behind the schedule that has been determined by the foreman.

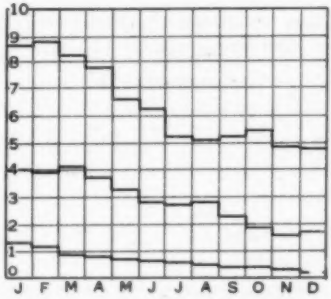

Fig. 3—Results from planning and scheduling.

This plan was adapted from the practice of one of the large engineering and construction companies, having contracts at widely separated points and requiring

ENAMELS AND UNDERCOATS

Pecora Enamel
and
Pecora Undercoat
A Safe Combination

WE cannot emphasize too strongly the importance of using a good undercoat as a base or ground for good enamel.

Our 64 years of experience in the matter of manufacturing surface finishes enables us to furnish you with products as nearly perfect as it is possible to make them.

Detailed Information on Request

PECORA PAINT COMPANY
Fourth Street and Sedgley Avenue
Philadelphia, Pa.

to know, in their main office, the progress that was being made on each job.

The results which have been secured from the use of this plan of scheduling and following up work in the finishing department appear in Fig. 3, which shows how costs were reduced on the three principal operations performed. This reduction in cost was gained solely by better planning of the work to avoid waste of time, and by better regulation of the work flow.

Spray Gun News

A complete new line of air guns for production finishing is announced by the Eclipse Air Brush Co. of Newark, N. J. These new models, one of which appears in the accompanying illustrations, are designed to meet the requirements of all phases of modern finishing; they include pressure-feed guns, pressure-feed cup guns and siphon-feed touch-up guns.

Among the important features incorporated in these new models, the feature that is held forth as marking the greatest advantage, is that they operate on low air pressure—even lower air pressures and volumes than former Eclipse models.

It is interesting to note the theory advanced upholding the application of materials at low air pressures and volumes. It is said that by utilizing a small quantity of air at a relatively low pressure, less expansion of the air takes places upon being released from the nozzle of the gun, thereby reducing the amount of heat extracted from the atomized materials intermixed with the air.

Thus, this lessening of the amount of heat required by the air during expansion, reduces the chilling effect upon the materials. It is further said that low volumes and pressures of air minimize the mists and make it possible to keep practically all the material within the actual spray jet.

New low-pressure "Model G-1" gun with pressure feed cup.

The Eclipse Co., in explaining why their new models employ lower pressures and volumes, state that the materials and air are mixed together inside the nozzle, rather than through intermingling jets meeting after leaving the nozzle.

All models are designed to give the operator trigger control of the flow of materials. A special Eclipse fan slot nozzle is also included as part of each gun.

When the pressure-feed tank employed at the spray booth, is not to be used for several days, all contents should be removed and the entire outfit cleaned with solvent.

"Do Your Specifications Call for Just a 'Finish' . . . or 'Surface Protection'? "

THERE is a difference. Any finish will cover the surface, but only scientific planning and supervision will result in complete surface protection and a more attractive, more salable article.

A finish scientifically adapted by experts eliminates the quickly appearing checks and mars, spots and scars that boost upkeep costs, reduce customer complaints and increase sales.

For your convenience, the

du Pont Industrial Finishing Service

freely offers its specialized training and experience, to the end that all your products may be scientifically, lastingly and economically protected.

There is a du Pont finishing material for every finishing purpose .. undercoats, primers, fillers, stains, glazing compounds, paints and varnishes, enamels, pyroxylin solutions, light-bodied lacquers and enamels . . . and DUCO.

E. I. du Pont de Nemours & Co., Inc., Chemical Products Division, Parlin, N. J., Chicago, Ill., San Francisco, Cal., Everett, Mass., or Flint Paint and Varnish Limited, Toronto, Canada.

There is only ONE Duco—DU PONT Duco

Imitating Inlaid Furniture

Revealing a simple and inexpensive process of lining and stain painting for decorating wood furniture to give it the appearance of having been inlaid with costly woods.

By Rupert von Lindau

INLAID work is one of the latest styles and very much in demand, but also very expensive, and for a factory making a medium priced furniture, it is next to impossible.

Inlaying is Ancient

Inlaid work is as old as civilization. There is inlaid work in metal, as gold, silver, lead and even bronze. This work was done by making troublesome carvings and engravings which were then filled with melted metal and filed down to the surface. The polishing process, according to very old pieces, was skillfully done. When finished, the article was made ready for market or was given away as a token of love, honor or friendship. Thanks to this noble purpose, many wonderful articles have come over to our time and are kept in museums or in honored places by old families.

Naturally, in its childhood, this industry was unskilled, coarse looking and subject to impossible imagination, but it represented a start and later developed into the finest art.

While a student in Europe, I once had an opportunity to look over the wonders of centuries, artistically arranged in the immense residence of a bishop. Paintings, carvings, metal work, furniture painted and decorated, inlaid furniture partly carved—a priceless assortment from the most primitive to the highest art—furniture which took years to complete. To describe all the wonders would take volumes, and I want to write only about imitating inlaid work on furniture.

The Process in Detail

The process is not new; in fact it is centuries old and we would probably call it a more or less lost art. We take a perfect piece of birch or maple and draw or trace a design of flowers, an ornament, a monogram, or any other design on it. Then the outline and contours of the design are traced with a sharp instrument to imitate the fine cut of the scroll-saw. This, after a little practice, can be done quite rapidly.

After the outline and contours are cut, we apply a heavy coat of white shellac over the design, being careful so that the shellac does not go outside the outlines, as this will show and make the design look ungraceful and blurred. We allow the shellac to dry two hours, and then apply the stain by dipping. If the decorated panel is to be glued to the furniture on the surface, after the staining process, I would advise one to apply the stain with a brush and keep the back free from stain, shellac, or greasy finger marks.

When the stain is permanently dry, remove the shellac entirely from the design, with alcohol, and blend the different water stains to the desired effect with a fine camel's hair brush.

When I say, "blend," I mean apply your stain by starting in the cut contours of the design, and bring it out slowly to the natural wood. A variety of different natural and artificially colored woods are used in genuine inlaid work. The blending from white to a deep brown was formerly done by dipping the different carved parts of the ornament into molten zinc. Now our ornament is complete and we allow a reasonable time for it to dry, after which we apply a coat of linseed oil and rub it with triple O or double O sandpaper until all the pores are filled. Then give it the regular finishing process as is used in your factory.

Possibilities Unlimited.

This process of imitating inlaid work, or "stain painting," does not require a first class artist, as anyone who knows drawing will be able to do it. The possibilities of this process are unlimited, the work is rapid and the results are surprising. It will stand a certain amount of abuse, as all the finish can be removed without injuring the design.

As I am not an owner of a furniture factory, I have practically no use for this product of my experiments, and it must go to the furniture industry at large. If some one profits by it I will call it a success. Millions of dollars are spent in trade schools, grade schools, night schools, high schools, etc., in the interest of the industry and the working man. Hundreds of inventions, discoveries, and good ideas occur every day, but much of this is lost to the entire industry and the progress of all, just because some crafty, ignorant foreman, in his jealous disposition, does not permit a working man to demonstrate his ideas, inventions or discoveries to his employers.

Staining and Filling

The first step in the actual finishing process is staining and filling. Careful selection of stain and filler and most important a good brush, are essential to perfect work. Different woods take the same stain with different results, depending on the quantity of tannic acid in the wood. Where more than one coat of stain is desired the first coat should be permitted to dry thoroughly and then it should be carefully sanded before the second coat is applied.

Staining and filling department in modern furniture factory.

Staining Interior Woodwork

So much has been said about water stains and oil stains, without differentiating between the woods on which they are to be used, that many finishers of interior woodwork are at a loss to know what kind of stains to use on certain woods. Many writers stress the superiority of water stains to such an extent that one might be led to believe them preferable for all kinds of work,

when, as a matter of fact, there are many woods and finishes for which oil stains are more suitable.

Except in stains that contain a considerable quantity of red, if the same shade of color can be obtained with an oil stain as with a water stain, the oil stain is usually the better stain to use. The reason why stains which contain red are excepted, is because it is difficult to obtain an oil soluble red that will not fade.

Undoubtedly water stain is preferable for staining mahogany color, whether on the real mahogany or on any other of the woods that are finished mahogany. But when we come to make any of the browns, such as the various shades of walnut, if the desired shade can be obtained with oil soluble colors, I contend that these are preferable because they entail less work through not raising the grain.

One point that should not be overlooked in the matter of oil stains, is the depth of color desired. As a rule, oil stains are not as good as water stains for dark finishes, because if applied very heavy they are not quite as clear, especially if the color is one with a body such as asphaltum.

If I were staining genuine walnut a very dark color I would use a water stain—that is if I wanted a dark brown walnut color. But for a medium brown walnut, I would use asphaltum. If this would not give the desired shade of walnut, I would combine with it one of the oil soluble colors to produce the shade desired. In staining birch in imitation of walnut, I would use water stain for a very dark color; but for a medium color I would use an oil stain with an asphaltum base.

A considerable number of residences are now being trimmed with gum, and many finishers do not know when to use water stain and when to use oil stain. Where gum is used, the finish usually is either light or medium walnut, or mahogany. As stated before, mahogany should always be stained with a water stain. Any fuzz raised by the stain on gum wood, can be removed by rubbing with fine excelsior after the stain is dry. This is better than sanding; it is less apt to cut away the stain in places and thereby leave a faded appearance. Excelsior is better than sandpaper also on birch, when this wood is stained with a water stain.

To make a good walnut oil stain for use on gum, mix together equal parts asphaltum varnish and a good grade of furniture varnish. This, when thinned with turpentine to the desired depth of color, will produce a good shade of walnut. The shade can be changed by adding oil brown or oil black. These latter colors should be dissolved in turpentine, then strained before being added to the asphaltum mixture.

Heat will help in dissolving oil soluble colors, but it must be used in the form of a hot bath away from any fire, to avoid the danger of an explosion or blaze. This stain is suitable for a medium shade of walnut on any of the woods ordinarily used to imitate real walnut, though a second coat may be required on woods that are harder than gum. However, the second coat should be

made very thin, and brushed out well with a fine brush.

In addition to not raising the grain of the wood, this stain fills the pores of close grained woods and makes an excellent foundation for the varnish coats. When a second coat is applied, it may be rubbed with steel wool to a surface as smooth as glass, which is of great advantage to the subsequent coats of finish. Usually one coat less of varnish is required where this stain is used. One coat of shellac and one coat of varnish, rubbed dull, makes an excellent interior finish.—T. L. Ulteman.

Ice Cream Trucks

Most ice cream delivery trucks have a compartment in which rock salt is carried, for salting down the ice cream in the soda fountains from which it is served.

Regardless of whether the truck body is made of wood or steel, there is usually some seepage of salt brine from this salt compartment which has an opportunity to act upon the finishing coats from the bottom upward, instead of from the top coat down. This makes it very difficult to finish ice cream delivery trucks with any finishing materials—either paint or lacquer—which will stand up for a considerable length of time.

If there were no seepage and the deterioration came from the top only, undoubtedly lacquer would be much more durable than paint or varnish, for the reason that it is much less affected by strong brine solutions than varnish or paint.

The present system of finishing, which one concern uses—one flat coat followed by a coat of lead and oil, mixed half and half, then a coat of clear varnish—is much shorter than a lacquer system would have to be to give a surface to the work, and a solid covering white color.

The shortest lacquer system that could be used would be one coat of primer built on a paint base, with sufficient oil in it to set the absorption of the wood, followed by two coats of white lacquer enamel. The lettering could be done on top of this white lacquer enamel in the usual way and then the letters varnished over to protect them from the wear of the weather. If luster is wanted, it will be necessary to polish the lacquer with a polishing compound to bring out this luster.

Brushing lacquers would not be very well suited for this type of work unless it is only desired to turn out an amateur job. By this I mean that brushing lacquers on such large surfaces as delivery truck bodies, might leave a few brush marks which, although not objectionable to many people, would nevertheless lack the finished appearance of a well sprayed lacquer job, or a perfectly brushed paint and varnish job.

If lacquer is to be used, it would be much better to install spraying equipment and use one of the standard automobile lacquer enamels on the market today, which are used on large cars.

Aside from being drained of its accumulated moisture frequently, the water and oil separator requires practically no attention. During certain seasons the relative humidity of the air is greater than during others, and it follows naturally that during these periods the water must be drained oftener.

Industrial Finishing

PRACTICAL PUBLICATIONS, Inc.
Publishers
Room 603, 222 E. Ohio St.
Indianapolis, Ind.

Issued monthly. Distributed exclusively to executives and foremen finishers in all kinds of industrial plants where finish coats are applied.

MARCH, 1926

Lacquer Progress.

Within the past two years there have been so many new converts to lacquer finishes that to attempt to estimate, even approximately, the increase in lacquer consumption, would be beyond the imagination of anyone who has no collective data on the immense quantities of the leading cotton solvents (butyl, amyl and ethyl acetates) produced during this period.

Manufacturers of lacquer and of lacquer materials have ably met the requirements made of them for the particular types of lacquer finishes peculiar to the products to be finished, and the means of application of the finishes. However, all problems have not been solved—some on the price basis and others subject to physical characteristics of articles to which the finish is applied.

The great increase in the consumption of lacquer has correspondingly, but inversely, affected the cost prices of solvents—a matter of paramount concern to both manufacturers and users of lacquer.

Further progress of interest will be announced in the near future when the results of experiments and development work now under way, in many laboratories and work shops, are tabulated, checked and subjected by repeated and rigid tests, to further establish their proven values beyond all doubt.

Motor Cars In Color

Color, inside and out, has been slowly but surely creeping into the automobile industry; and the wise manufacturer to whom black or dark blue was once safe, sane and sensible, should step boldly forward to a leading position in the new era of color harmonies. The recent Automobile Salon in New York City was but an added indication that the automobile could be made to take on the colors of the rainbow and yet remain dignified.

At this year's event colors, bright and vivid, dominated the entire show and the few black cars exhibited looked dull and funereal by contrast. On the whole the efforts of the master painters who designed and carried out the many unusual color schemes were triumphantly successful.

Small cup containers are generally used with spray guns for testing materials, and for trimwork, or where only a very small quantity of a particular color or material is desired. They can be obtained in sizes ranging from one half pint to one quart.

The nature of the material determines the air pressure that should be used for its application. Other factors, such as the quality desired, speed of application, distance from work, etc., must also be considered.

SHOOTING trouble for Foreman Finishers keeps quite a few of our laboratory experts busy right along.

—J—

Some of the problems batted up to them take days to puzzle out. But their answer saves days, and dollars, for the factory which sent in the question.

—J—

It might be your factory, any time. And our people will tackle the thing just as hard whether your people buy from us or don't.

—J—

If there's anything about finishing that isn't going quite right with you now, let us take a whack at it. Can't cost you anything, anyway; and may save you a lot.

Samples to match any special need of yours, or to show any item in our regular line. And they are proper samples—not mere dabs. Send for any you might use if the price fitted in with your cost-limits.

LABORATORY
as big and well-equipped and—we believe—as ably manned as any in the trade. It is at your service completely.

PLANT
entirely modern, making everything we sell, and run to meet any real competition on a quality basis.

PRODUCT
includes Varnishes, Lacquers, Enamels, Fillers, Stains, Undercoats, and a Sub-Shellac that's THERE. May we send you details and quote you prices?

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WOOD—FIBRE—REED—METAL
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FINISHING AUTHORITIES FOR 40 YEARS
RACINE, WISCONSIN

Wax Finishes—and Others

Foreman Finisher explains treatment necessary for finishing hardwood surfaces in wax, and outlines fundamentals required of higher-class finishes on more expensive furniture.

By Carl M. Raymond

SOME TIME ago a concern in England inquired, through this journal for information relative to the wax finishing of oak, birch and mahogany in medium class furniture, and a better process for more expensive goods. For the wax finish, if the wood is colored with water stain, remove all loose fibers by rubbing the surface with fine excelsior. This is preferable to using sandpaper, as the latter is apt to remove too much color and produce a faded appearance.

Filler Omitted For Wax

It is not customary to fill wood for wax finishes. After the excelsior operation, dust off the wood and apply a coat of shellac. The number of coats of shellac to be applied depends on the quality of finish desired. Some finishers put on only one heavy coat; others put on two good coats, and a few put on three coats. No matter how many coats of shellac are used, the first and last coats should be made smooth by sanding with fine paper.

After the final sanding, remove all dust and apply a coat of prepared wax, which can be obtained from any dealer in wood-finishing supplies. The wax may be applied either with a brush or a rag. A rag is preferable for plain surfaces, but a brush must be used for corners and carvings. The rag must be soft and free from lint. The coat of wax should be thin, that is, rubbed out with the rag to a thin film, and polished with the rag. Rub with a circular motion the same as in French polishing, except that when polishing wax, a longer stroke or sweep should be taken. The film of wax can be built up by applying and polishing successive coats, as is done in French polishing.

A More Costly Finish

For a better class of finish on the more expensive goods: If the wood is to be water-stained, it should be first sponged with warm water to raise the grain, which otherwise will be raised by the stain. After the wood is thoroughly dry, sand the surface with very fine paper. Two things are very important right here: First, make certain that the wood is thoroughly dry after sponging, because if it is not it will not sandpaper properly. Second, do not sandpaper more than just enough to remove the raised grain, or fuzz. If the sandpaper cuts below this, it will loosen more fuzz, and the last state will be no better than the first.

After the stain is applied and allowed to dry, if any considerable amount of fuzz rises (which is apt to occur in the case of oak and mahogany) it would be well to apply a thin coat of shellac—about 1½ lbs. to a gallon of solvent—and when this is dry, sandpaper lightly. The shellac will hold the fuzz erect so that the sandpaper can cut it off clean.

Filling Must Be "Right"

The next operation is "filling". Paste filler for this purpose can be obtained, with full direction

Brevokrak!

New in lacquer finishes.

Let us tell you about it so you will be in a position to satisfy the growing demand for this unique, distinctive product.

It is an accepted finish for the high class furniture and fixture trades and is also popular in radio and novelty lines.

We shall be pleased to finish a few samples of your product in any combination you may select.

Demonstration made at your plant if desired.

Waukegan Chemical Company

"Values that endure"

WAUKEGAN :: ILLINOIS

for thinning, from any house supplying wood-finishing materials. For oak wood the filler should be as thick as will permit brushing on freely and uniformly, and it should be worked well into the pores before it begins to set under the brush.

Some finishers have trouble with what is known as "pinholes", which is the result of the pores not being properly filled. If the filler is too thin for the wood on which it is used, or if it is not worked into the pores at the time of applying, the air in these pores will sometimes cause the varnish to rise in a blister; sometimes it will force the varnish back into rings around the pores, with a small hole like a pin prick in the center.

Walnut and mahogany require a filler slightly thinner than that for oak; and a very thin filler will answer for birch. Some finishers do not fill birch at all, but my experience is that it pays to do so. Filler should be cleaned off with excelsior and rags, using the former, first, and then wiping clean with the rags, always rubbing across the grain so as to disturb the filler in the pores as little as possible. The filler should have from 24 to 48 hours in which to dry, if the drying takes place in the open shop. Much depends on atmospheric conditions, of course. If one has a drying room this time can be reduced considerably.

Use Varnish or Lacquer

From the time of filling, processes vary somewhat in different shops, all depending on the quality of finish desired and the kind of materials used. We have varnish finish and lacquer finish. Varnish may be applied either with a bristle brush or a spray gun. Lacquer should be put on with a spray. Where a varnish finish is applied, it is customary to first apply a coat of shellac, or other similar materials, as a priming coat for the varnish. Some finishers use shellac beneath lacquer, and some do not. Lacquer is the more durable finish, and is particularly recommended for dining room furniture, especially tables, as it is not affected by hot plates. It is not as easily marred as a varnished surface.

One disadvantage with lacquer is that it is harder to rub than varnish, but this disadvantage is more than offset by its remarkable durability. The rubbing is generally done with pulverized pumice and paraffin oil thinned slightly with kerosene in the proportion of one pint of kerosene to a gallon of paraffin oil. These materials are used with burlap or felt for rubbing. This rubbing is done to cut off all grit and nibs on the surface, and it produces a perfectly smooth finish with a slight sheen.

In this article I have attempted to merely outline the fundamental principles of finishing. There are many details peculiar to local conditions, which one must know to be able to deal with them properly, and which must be worked out by the finisher who does the work.

The average pigment paints, enamels, etc., remain in suspension sufficiently to eliminate the necessity of more than occasional agitation, while all clear substances, such as lacquers, varnishes, etc., require no agitation whatever.

Nitro-Donotex

is making a hit everywhere

Nitro-Donotex can be used as a finish or a builder. As a builder it takes the place of pure shellac at a price much lower than the latter.

Nitro-Donotex answers the demand from manufacturers for a lacquer preparation that can be brushed or sprayed and costs less than $2.00.

It's also produced in the dead flat finish which is so popular today.

The body of Nitro-Donotex is very heavy and will stand 100 per cent. reduction by the use of our Nitro-Donotex Thinner. Order 5 gallons of each at the barrel rate for trial, or let us send you further information.

DON-O-LAC COMPANY, Inc.

770 Exchange St., Rochester, N. Y.

Enameling Refrigerators

A practical finisher explains why enamels sometimes peel and crack, and tells how to produce a satisfactory high-grade enameled job on this class of work.

By Otto V. Bott

A NUMBER of concerns have more or less trouble with enamel peeling off, after the work has stood for some considerable time. Others find that the enamel chips easily after it has become thoroughly hard. The reason why enamel peels or chips is usually on account of a shortage of binder in the priming coat. The priming coat requires, and should always contain, more binder than is necessary in succeeding coats of undercoater.

Priming for Enamel

In priming for enamel we should apply the same principle that we do in priming the outside of a house for the succeeding coats of paint. The priming coat for the outside of a house is largely oil—pure linseed oil—when we desire to make a durable job.

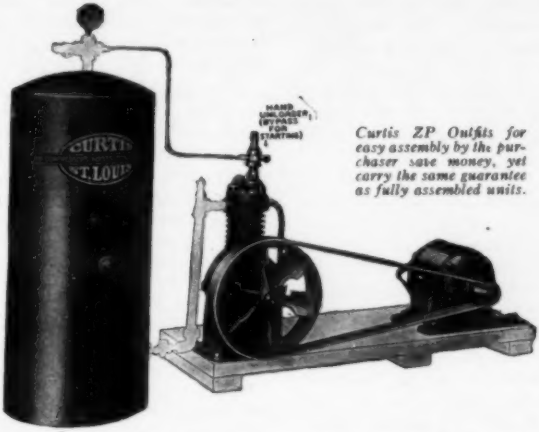
Lead and zinc pigments, when in a dry state, are not unlike whiting in appearance. It is not until they are ground or mixed in oil that they become a paste, and sticky. If we were to take pure white lead ground in oil, and reduce it with turpentine, and apply it to wood, the latter would absorb almost all the oil from the lead and leave it with insufficient oil to bind together. In time the particles of lead would separate from each other and from the wood. For this reason it is customary to thin white lead with pure linseed oil, so the oil will penetrate the wood and form a binder between the wood and lead, and also leave enough oil with the lead to bind the particles of lead firmly together.

With oil binding the priming coat of lead and wood firmly together there is no danger of the paint peeling, because succeeding coats will unite firmly to the priming coat and to each other.

What applies to the priming coat in outside painting applies equally well to the priming coat for enamel. In fact it is even more necessary to have a good union between the wood and pigment in the priming coat for enamel, than for paint, because the undercoating for enamel is always short in oil.

Usually the instructions for enameling merely tell about the undercoating, and make no distinction between this and the priming coat. The material known as "undercoater," is for the purpose of building up a foundation for the enamel. It is also quite necessary to have a good foundation for the undercoater.

A good priming coat can usually be made from undercoater by adding a quantity of binder. What this binder should be, depends on the material used in the undercoater. If undercoater is to be used for the priming coat, it would be well to consult the manufacturer regarding the material to use as a binder. Usually the manufacturer will supply a binder; then no mistake can be made.



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The Compressor That's Used by the Spray Gun Manufacturers

The principal manufacturers of pneumatic spray painting equipment, have approved and are using Curtis Compressors as standard. In spraying lacquer you must be sure of a clean, dry air supply. Your compressor must not force oil into the air line. Curtis compressors deliver only enough oil to the cylinders to assure proper lubrication—no excess to enter the air line. No matter what make or type of paint gun you use, insist upon a Curtis Compressor to furnish clean, dry air in order to produce successful lacquer or paint finish. Mail the coupon below for full free information. No obligation, of course.

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Branch: 5518D Hudson Terminal, New York

Please send me complete FREE information about Curtis Air Compressors for paint and lacquer spraying outfits.

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Lacquer Enamel

A few years ago we had only varnish enamel. Now we have both varnish and lacquer enamels. It will be admitted generally that, for refrigerators, lacquer enamels are preferable. Lacquer enamel should be applied with a spray.

Where lacquer enamel is used it is a good plan to obtain the undercoater from the makers of the lacquer, since all brands of undercoaters do not make a good foundation for lacquer. Failure sometimes comes from neglecting to see that the right kind of undercoater is used.

For a real good job, each coat of undercoater should be sanded with fine sandpaper and each coat of enamel should be rubbed with steel wool just before applying the succeeding coat. These are the fundamentals for a good job; minor details can be worked out by the finisher, as local conditions require.

Indeed Lacquer is Here

Lacquers, until a short time ago, were only known to be used for coating metal wares. Such lacquers are based on spirit-soluble gums and coloring matters, among which were prominent, raw, bleached and refined shellacs, gum mastic, sandarac, eleim and numerous coloring matters based on natural and vegetable dyes and extracts. Solvents included, alcohol, fusel oil, amyl acetate.

All these have been put aside by the modern lacquers based on treated cotton and solvents of divers kinds and origin. Practically all of these solvents are distillates of vegetable matter but several are derivates of hydro-carbons. We are approaching the time when oil and gum varnishes and similar coatings will be entirely eliminated and lacquer will be the predominant surfacer.

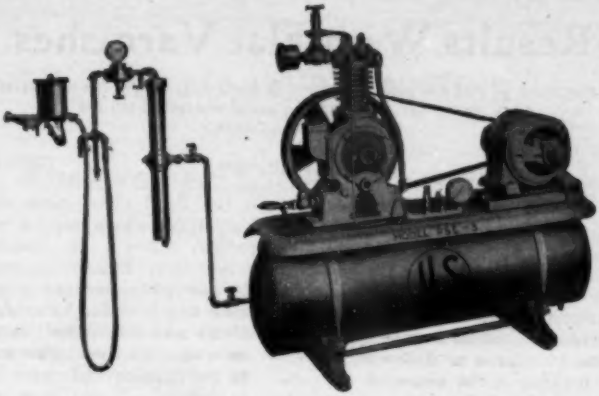
The quick setting and drying qualities of lacquers permit a more perfect finish of never previously dreamed of perfection. To apply three or four coats per day, eliminating drying ovens, saving rubbing, sandpapering and other smoothing processes, is the ideal of our present day finishers and we can also satisfy our customers by delivering the goods earlier. On account of the quick drying features of lacquer, brush work is reduced to a minimum and the mechanical application by air spray must be resorted to.

Do not fail to look into the future, finishers! You will all be lacquering surfaces very soon, and varnishing with a brush will be remembered only by "old timers". The lasting qualities of lacquer under all conditions will decide in favor of it. Continuous improvements in the production of lacquers, and newly discovered ingredients for the compounding of same, will make oil and gum varnishes obsolete.—Geo. Whigelt.

Additions to Pratt & Lambert Plants

Pratt & Lambers, Inc., Buffalo, have completed an addition to their lacquer plant in West Ave., adjacent to their main varnish factory, which will give an increased capacity of three to four times over the present output of cellulose lacquer.

There is a growing demand for lacquer products, and the additional facilities were made essential to take care of the company's greatly increased lacquer business. Several additions have also been made to buildings at the main factory in Tonawanda St., allowing for necessary expansion in a number of the manufacturing departments.



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The compressor of the U. S. Paint Spray unit is designed and constructed especially for paint spraying purposes.

It produces a large air volume in order to do the work right, which cannot be accomplished by small fractional horsepower units.

Either the 1-gun or 2-gun unit guarantees and assures you sufficient dry clean air for continuous heavy duty operation.

Twelve distinct and complete Paint Spray Equipments are made by U.S. Send for Paint Spray Bulletin showing U.S. Paint Spray Equipments and how to use them.

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Manufacturers of U. S. Air Compressors: Complete Paint Spray Units and Car Washing Equipments

Results With Flat Varnishes

The purpose of flat varnish may be defeated by using an unsatisfactory material, or by using good material under improper conditions

By C. W. Richardson

FLAT VARNISHES are those products which are so designed as to dry with a luster less than the full gloss; they require no rubbing. They are used principally on table legs and other less conspicuous parts of furniture to give a dull-rubbed effect without the expense of rubbing down a full gloss piece of goods. On some classes of work they are used over the entire surface.

Three General Classifications

In general, flat varnishes are of three classes. In the first class come those varnishes that depend upon a percentage of finely-ground pigment for their flattening properties. These pigments sometimes settle and have to be stirred up before using. Even then it is hard to get uniformity of luster at all times with this type of flat varnish, due to streaking.

The second class is made by partially dissolving certain varnish gums in hot turpentine and oil. In most respects this type of flat varnish is better than the pigment flat varnishes, because it does not settle. Due to unavoidable differences in the varnish gums and in the heat treatment during manufacture, however, it is a little difficult to maintain a uniform luster in their manufacture. Furthermore, not enough oil can be incorporated in this type of flat varnish to make them as tough as they should be for durable work.

In the third class come those flat varnishes which depend upon a certain amount of dissolved wax for their flattening action. These varnishes produce a very pleasing finish as far as external looks are concerned, but the wax in some of them has a tendency to rot the varnish and cause it to go to pieces. These wax varnishes usually represent the cheapest type of flat varnish, and I question their value from the standpoint of durability.

China Wood oil, when especially treated, can be made to give flat drying qualities to varnishes, but it is very difficult to maintain in uniform luster. Other manufacturing difficulties make this type of flat varnish so little used that it is hardly worth being considered in a class by itself.

Probably the best flat varnishes are made by partially dissolving gum in hot turpentine and oil and then adding a very small amount of a pigment flat varnish to insure uniformity of luster. Of course, gloss varnishes are added in various proportions to increase the durability and luster wherever desired, but the type of gloss varnish is very carefully chosen to prevent changing the drying and wearing qualities.

Should Not Stand Long

From their very nature, flat varnishes deteriorate in the package much more rapidly with age than do gloss varnishes. Sometimes the luster increases to such an extent upon standing that it

THE MASTER FINISHER
Says:
"When you get Lacquer on wet enough, you get a good job"

Does not this fit in with your experience? Have you solved the Problem? Many have found the answer in the SPRACO 14-A Lacquer Gun, and the knowledge of this fact is constantly spreading like ripples in an agitated pond.

You have in mind the "real" job and you strive to realize it in every piece of work you attempt, as any man who is proud of his work always does. Here is the tool that will do the trick for you. Perfect atomization with enough of the carrying vehicle left in to assure the Lacquer reaching the surface in a flowing condition. You know the result.

Did you see last month's advertisement on "Finishing Without Masking"? Get the story of the SPRACO Gun in Bulletin 103.

Spraco Painting Equipment Company

Makers of the dependable 14-A Gun for Industrial Finishing

60 High Street BOSTON, MASS.

is hard to believe the material formerly dried out with a flat finish.

Flat varnishes are very apt to skin over, after standing a long time in a partially filled container. The skin may be broken up when the varnish is next used and it will then show on the finished work as unsightly, rough, dirty spots.

For these reasons, it is advisable to order flat varnishes in one gallon or five-gallon cans, unless the consumption is sufficiently rapid to use a drum or barrel of the material within a short time.

Causes of Glossy Effects

Heat has a harmful effect on flat varnishes that are made by dissolving gum in hot turpentine, because more of the gum may be forced into solution and the varnish will then dry with a higher luster. For this reason flat varnishes should not be heated before applying, nor should they be stored in a hot room.

As a general rule, flat varnishes dry with a higher luster when brushed than when sprayed. The character of the undercoat used under the flat varnish has a great deal to do with the ultimate luster of the finish. When applied over a gloss varnish which has not been sanded, they dry with considerable more luster than when applied over shellac, or directly over the filler. My recommendation is to spray flat varnishes at about 70-lbs. air pressure over a gloss varnish, rather than directly over the filler or over a coat of shellac. The luster will be more uniform and the toughness will be better.

It is not necessary to rub flat varnishes, but many people even up the luster and knock off dirt nibs by rubbing lightly with burlap and oil, usually without any pumice stone. Some flat varnishes take on a higher luster if they are rubbed too much; the flat film on the surface rubs off. Some of the flat varnishes will not stand rubbing with oil, without softening up.

Wood Lacquers

That give a finish that lasts. We are Pioneers in making dependable lacquers since 1857. Send requirements, get our prices.

Chas. Cooper & Co.

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Works—Newark, N. J.

Beckwith-Chandler Co. Will Increase Capacity

J. Alex Wilson, general sales manager of the Beckwith-Chandler Co., varnish, color and lacquer manufacturers of Newark, N. J., has just returned to the office after a ten weeks' trip throughout the country interviewing the sales force as well as appointing several new distributors. He reports a steadily increasing demand for lacquer finishes of all kinds, for all purposes, and the company is already planning extensive alterations for additional floor space and equipment to meet the demand.

Cook Buys St. Louis Plant

The Cook Paint & Varnish Co., of Kansas City, Mo., has purchased the Scott-Sullivan Paint Co., of St. Louis. The purchase includes both the manufacturing and distributing business of the company which will be continued as the Scott-Sullivan Paint Co., division of the Cook Paint & Varnish Co.

This gives the Cook company three factories, well located for distributing purposes, the main plant and offices being in Kansas City; another factory is located at Fort Worth, Texas. Since entering the paint manufacturing business in 1913, through the purchase of the A. M. Hughes Paint & Glass Co. of Kansas City, C. R. Cook has made a phenomenal success and has developed a business which in 1924 amounted to over $2,500,000.

The New Paasche Multiplehead airbrush, with the demountable head. These heads are made in five sizes, giving the user the range of five air brushes in one. The brush is easily cleaned with a cloth—no wire or drill. This minimizes clogging and keeps the brush at work. The spray can be accurately and gradually changed from round to fan shape by merely turning a lever. These are a few of the advantages of this new brush

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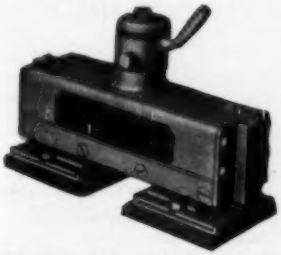
FASTER production and better finishes—those are the things industry demands. And to get them meant that a new airbrush had to be designed—something entirely different from anything else on the market. Paasche engineers, with twenty years experience in making fine airbrushes, have developed the Multiplehead, the finest and yet the fastest airbrush ever made.

Call for a Paasche representative. Let him show you how Paasche can reduce your finishing costs. Or write for descriptive bulletins.



Save labor with this new Pneumatic Rubbing Machine. 1600 strokes a minute! This 9 lb. rubbing machine saves the labor of several men, and at the same time produces smoother and more uniform surfaces. Its reciprocal motion is identical with hand rubbing. Can be attached to any air line.

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- Enamels
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Questions and Answers

This service department is conducted to meet the readers' need for prompt information on specific problems, and to give others an opportunity to review the questions and to offer comments, suggestions or answers

Remove Fender Tar

What is the easiest and simplest way to remove tar from beneath the fenders of automobiles, before painting?—J. F. McG.

Porcelaining Process

We are interested in the process and equipment for procelaining—for finishing bath room and other fixtures such as soap dishes, glass holders, etc.—F. Mfg. Co.

Metal Casket Finishing

I am very much interested in the methods employed for finishing metal caskets; for example, imitation wood grain and color on steel, solid colors and striping on steel, and imitation bronze (smooth and rough) on steel.—G. L. G.

Preparing Aluminum Castings

We are interested in the best methods of cleaning or preparing aluminum castings, before applying spray finish—this in order that the finish will adhere extremely well to the casting.—A. C. Co.

Finish For Mule Hide Floors

Here is a real problem to me. A number of business houses here use "Mule Hide" roofing for floor covering. It makes as good a covering as many materials commonly used, and is cheaper, but its surface isn't quite hard enough to be readily cleaned. Could it be coated with some kind of lacquer or varnish—preferably lacquer—and not paint?—J. D.

Fish Bait Cans

A sheet metal shop here puts out a fish bait can, which they finish by baking 1½ hours after dipping in an enamel containing primer and finishing coat in one. Could these be finished more economically with some fast-drying lacquer put on with my automobile shop spray gun? The final finish should have just a little gloss.—D. I.

Walnut Stain—Shellac

We are using a good deal of maple for legs on tables. We stain them walnut to match walnut veneer tops, and are wondering if you will give us a formula for walnut water stain that will spray on legs.

Can you also give us the same formula with shellac or commonly called shellac water stain. —C. D. M.

To Marble-ize

Please tell me how to marbleize.—G. D. F.

The proper way to marbleize depends a great deal upon the exact work being finished and the results desired. If the objects are small enough in size to permit of dipping, a very good marbleized effect can be produced by first putting on a suitable ground

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color, letting it dry, then splashing various shades of color on the work here and there, and finally dipping the object in a coat of clear lacquer or a coat of clear varnish while the splashes of color are still wet.

The colors should blend in with each other and streak down across the surface in such a way as to very closely imitate marble, if the proper shades of colors are used.

Where larger surfaces are being marbleized it is necessary to put in the imitation marble grain by the use of colors and small striping pencils or brushes, blending the colors together as may be needed to imitate marble.

There is also now on the market a mechanical system for reproducing marble on furniture and similar work. This method requires a copper plate which has been etched according to a natural photograph of a piece of marble. This plate prints the grain of the marble onto the ground coat and then, after the ground coat has dried, a clear coat of lacquer or varnish is applied to protect it.—I. F.

Lacquering Steel

How can we make lacquer stick to drawn steel parts? Have tried all kinds of paints, also put on primer first and allow to dry 24 hours, then apply lacquer, but still paint peels off. The only way we find to make paint hold is to sand-blast and this dulls finish.—A. F. S. M.

You do not tell us in what way the drawn steel parts are cleaned before the lacquer or paint is applied. The fact that paint and lacquer adhere after the work has been sand-blasted shows that it is principally a matter of cleaning the surface, and that the fault does not lie entirely with the type of steel used.

It may be that the metal contains small traces of grease or oil in the pores. Perhaps the most economical way to clean the metal would be to dip it for a short period in a rather strong caustic solution, to dissolve any oil or grease that might be present. Then wash the metal in hot water, scraping it with cloths or applying mechanical friction in some other way so as to insure the removal of all of the caustic solution.

Finally dry off very carefully with dry cloths or sawdust, or use some similar method to get rid of the moisture. Then apply your finishing materials before the work will have had a chance to start rusting, and we believe you will have no difficulty in getting paint or lacquer to stick to your work.—I. F.

Masking Car Windows

Isn't there a material made that I can use when spraying lacquer on closed cars, instead of taping paper over the glasses and panels that I am not spraying?—D. A. P. S.

There are several materials on the market which can be used for protecting glass and panels on automobile bodies when spraying lacquer on closed cars, without the necessity of taping paper around these parts. Some of these products are advertised in the pages of INDUSTRIAL FINISHING.

Some finishers make use of transmission oil, vaseline or similar materials for this purpose, inasmush as lacquer will not dry over these surfaces; it can be readily wiped off, together with

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the grease, with a gasoline rag after the lacquer has hardened on the parts that have not been coated with the vaseline and grease.

The drawback to the use of such a material as this, however, is that care must be taken not to put the vaseline or grease on any parts of the work where it is desired that the lacquer stick, for lacquer will not dry nor adhere to the surface if there are any traces of grease or oil under it.

Some finishers draw a stripe with a regular striping pencil dipped in oil of this sort to cut off one panel from another, and then fill in with grease below or above this stripe for a distance of a few inches. After the lacquer coats have been applied and dried a gasoline rag takes the grease and undried lacquer off and leaves a clean cut stripe.—I. F.

Peeling Due to Frost

In reply to C. J. B's. question in February issue, the peeling of paint applied over frost is due to the effect of heat which melts the frost, expands the metal, draws the moisture and breaks the film of the paint. The result is peeling.

As metals differ in gauge they differ in the rate of expansion and contraction due to heat and cold. Hence the apparent difference in the result when paint is applied over the frost.—D. E. Sellers.

Test For Zone Paint

I wish to learn of some quick test for a white zone or road-marking paint—a test which will determine brittleness, elasticity and general wear. The paint I refer to must dry in warm weather in 30 minutes, that is it must be so that auto traffic will not pick up the paint.

The composition of this paint is China wood oil, boiled linseed oil, cobalt dryer, benzole and zinc. We are compelled by law to buy on bids and to do this we must furnish specifications. I wish to include in the specifications some kind of test. Anything you may suggest will be greatly appreciated.—C. A. S., Foreman Paint Division, Ohio Highways.

There are, no doubt, a number of elaborate tests which could be made, providing special equipment were at hand, but we assume that this will not be available. We will therefore suggest those which could be made under average conditions.

In our belief, a test for abrasion would be the proper one, as this material would be subjected to great friction. The test should be made at a certain time after application and should show toughness of film and adhesiveness, as for instance by having a stream of sand or emery of a specified particle size poured on at a given angle and distance from the panel, for a certain length of time.

To work out the details it would be best first to make the tests on materials which have proven satisfactory to you, as there is no other simple method of defining the limits of satisfaction.—I. F.

To Clean Metals

In reply to an inquiry, in February issue, under the above heading, I might state that an ex-

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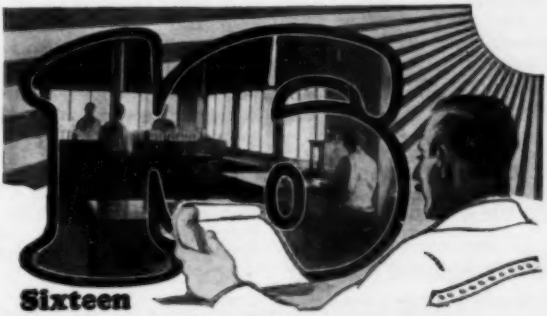

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perienced hand is required for successful sandblasting. Excessive blowings will pit the metal; uneven work will remove the paint only apparently.

Sandblasted metal is extremely tender, hence it is subject to quicker corrosion. Such a body should be rushed into primer at once. A further danger lies in sand particles remaining in pockets and moulding edges, and possibly reaching the bearings where the body is not completely taken down. In expense, it is more suited to a production shop than to a small shop, which is better off with ordinary acetone or caustic removers.—L. D. Barker.

Referring to E. L. A's. inquiry in February issue, for a process of removing grease and rust from metal parts prior to finishing, I would call attention to the fact that "Deoxidine" is being universally used for this purpose. In the automobile industry, where it is also called upon to counteract the rusting action of soldering acid, hand marks, etc., the "Deoxidine" process is a standard one. Will be glad to supply further information to anyone interested.—F. P. Spruance, American Chemical Paint Co., Ambler, Pa.

To Imitate Spanish Leather

How should I proceed, to make Spanish leather?—F. D. G.

A very good imitation Spanish leather can be obtained with the new crackle lacquers which are now being used for decorative purposes on furniture, lighting fixtures, advertising novelties and many similar objects.

Instead of the customary method of applying a clear lacquer coat over the crackle lacquer, when it is desired to imitate leather, replace this clear coat with a colored lacquer enamel of the desired shade. The finish will then give you impressions resembling the elongated grain in Spanish leather, but will have a uniform color over the entire work instead of a two-color effect which is customary when using crackle lacquers.—I. F.

Lacquer is in Demand

Referring to J. G.'s inquiry in February issue, the reason for the popularity of lacquer is not only its great durability, but the fact that its speed of drying permits considerably more work to be turned out in a given space than with varnish. Some authorities place the figure at 30 percent more production, with the same shop and labor.

A spray machine is, of course, essential, but by enabling you to do more work it increases your capacity for taking in work, and hence your shop's earning capacity per month is proportionately increased.—I. F.

Lacquer is being used quite extensively for the finishing of automobiles and it is the concensus of opinion of experienced automobile finishers throughout the country, with very few exceptions, that the lacquer finish is here to stay.

This does not necessarily mean that the use of paint or varnish will be entirely discontinued, but it does mean that the successful auto paint shop in the future will probably have to be equipped to turn out either paint or lacquer work as the customer may wish.

Many automobile drivers have

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now had lacquer finished automobiles in their possession for two or three years, and are so well pleased with the way in which the finish has stood up that they would not consider owning an automobile finished by the old paint and varnish method.

Polishing methods have been perfected to a point where a luster almost equal to that secured by the best finishing varnish can be obtained, and with the great variety of colors now available there is no objection on the part of the automobile finisher to the use of lacquer, from the standpoint of lack of luster or limited selection of colors.

Conditions in your particular territory may differ from those in other parts of the country and I suggest that you investigate the possibilities of doing even more work, by equipping yourself to turn out a lacquer job as well as a paint and varnish job.—D. W. Harmeson.

Objections to Gasoline in Body Finishing

Replying to A. B.'s inquiry in February issue, there are several objections to the use of gasoline in automobile body finishing.

First: Gasoline soaks in, opens pores and leaves a greasy film that endangers the adhesion of either paint or lacquer. One widely experienced finisher sands dry over the glaze, then dusts and sponges the body with water, finishing with No. 420 "Wetordry," always keeping the body wet, so as to make for smooth work.

The body then must be well dried and dusted, going over it with a razor blade to break all bridges formed by primer and surfacer at molding edges. File and rasp marks are best glazed with the heavy residue of the surfacer in the bottom of the container, this being applied with a bit of isinglass. This glaze is not too heavy and, being porous, will not result in checks.

Second: For rubbing the final lacquer enamel coat, it is best to use one of the patent rubbing compounds—they cut faster. The same applies to polishing—use a prepared brand.—I. F.

Automobile Undercoats

Replying to B. A. P's. inquiry in February issue, so far as I have been able to learn, lacquer base undercoaters have proved too brittle to assure proper adhesion, and the trade therefore, has experimented with it only, confining regular production to the oil paint undercoaters.

It is an axiom that the slower drying the undercoater, the greater and more permanent the adhesion. Oil undercoaters, however, may be force dried to speed up the drying, without danger, providing there are proper facilities for running up the room heat to 175-degs. or thereabouts.—S. F. Johnson.

In reply to the inquiry of B. A. P. in Feb. issue, will state that while we manufacture both kinds of primer for lacquer work, we have no hesitancy in recommend-

Auto Lacquers

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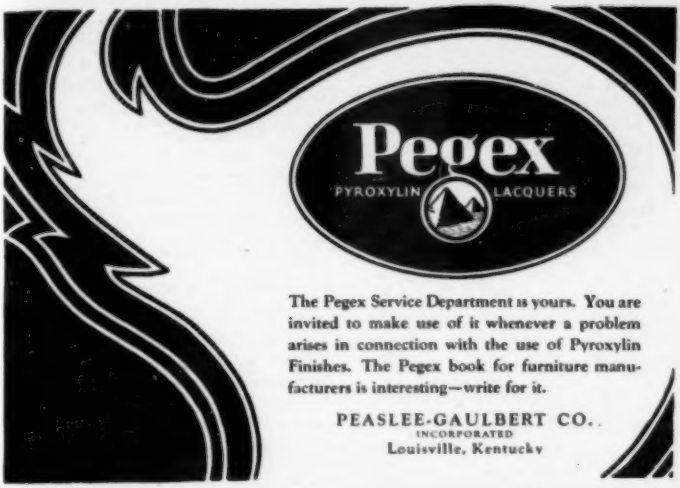

The Pegex Service Department is yours. You are invited to make use of it whenever a problem arises in connection with the use of Pyroxylin Finishes. The Pegex book for furniture manufacturers is interesting—write for it.

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Louisville, Kentucky

ing a long-oil metal primer where durability is essential, because the pyroxlyn primer merges with subsequent coats of pyroxlyn enamels and all will, when thoroughly dried, chip off together.

The oil base primer does not merge with subsequent coats of lacquer, although they adhere to it and to the metal.

Recently we saw a re-lacquered job, built on long-oil metal primer, of 20 months standing. The metal had been badly dented in an accident, yet the finish withstood the hammering necessary to remove the dents.—The Deming Color Co.

Paint Shop Ventilation

Referring to the inquiry of A. O. S., in February issue, regarding the ventilation of a small auto paint shop, it must be remembered that the fumes of lacquer travel low, therefore it would be best to place the ventilator fan about 3 ft. from the floor. However, as this may involve the expense of cutting through a solid wall, the best alternative will be to set the fan and motor on the window sill, closing the window down on top of the box and sealing the opening all around.

We believe you should do this as soon as possible, as under present conditions you are not only running some personal risk, but very likely contravening insurance regulations as well. The fan, of course, should be placed in the line of spraying as closely as possible.—I. F.

Many of the spray equipment manufacturers now have ventilating fans which can be attached to any window opening, for carrying off fumes from nitro-cellulose lacquers.

These same people also have especially designed spraying booths which are properly ventilated to carry off the fumes when the work is coated in the booth.

Several of these spray equipment manufacturers are regular advertisers in INDUSTRIAL FINISHING and by writing direct to them, you no doubt can get the information you wish.—T. M. Evans.

Brush Lacquer Results

Referring to an inquiry under this heading, in February issue, by N. J. M. Corp, there are a number of good clear brushing lacquers now on the market and assuming that you have tried all, it would seem that your failure to obtain satisfaction is due to the methods employed, probably too much brushing. This working back and forth brings about a solvent action on the coat or coats below.

Give each coat at least 30 to 45 minutes to dry; then lay on additional coats smoothly and with as few strokes as possible.—I. F.

With the old type of lacquer enamels it is true that when a second coat was applied over the first coat, it softened the first coat so much that the latter brushed off. This has been overcome with the new type of brushing lacquer such as is described in January issue.

However, in applying a brushing lacquer, even this more modern type, it is advisable to use a full brush of the material and not disturb the undercoat any more than necessary, by brushing. In other words, the finish should be laid on and then not disturbed;

LASCOTONE

LASCOTONE was designed to give the same result as two coats of Varnish and to rub and polish as easily. We suggest one coat of LASCOROID over the stain and filler and light sanding followed by two coats of LASCOTONE either brushed or sprayed, allowing four hours between coats.

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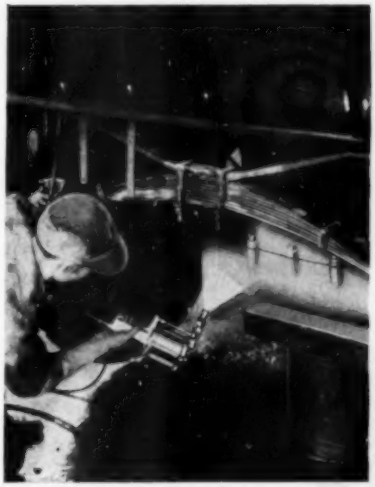

Continuous spraying in any position

proceed to the next remaining bare places and apply the finishing material there.—C. F. Merrifield.

Regarding the N. J. M. Corp. question about the use of brushing lacquer, these lacquers of course are new and some of them are not so nearly perfected as yet, but there are several good ones on the market. Your trouble is probably in the brushing, more than in the material. I am using a brand of this material every day, and have found that unless proper care is taken in brushing, it pulls, as you say.

An oval or round brush, suitable to the needs of the job is best, as it carries more pigment than a flat brush. Thus you can get a more flowing coat with less brushing. This material must, in every instance, be flowed freely; otherwise, you are bound to pull up your undercoat.

Although the time allowed for drying is half an hour, don't rush this, as a good drying helps. By doing some experimenting, and with a little practice, you will be surprised how quickly you can build a hard glossy body on your work.—J. K. Cooper.

Brazed, welded, soldered and galvanized iron surfaces can be prepared for paint or lacquer by brushing on ordinary household cider vinegar, and letting it dry.

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Floor Lacquers

In reply to A. H. C. & Co.'s inquiry, in February issue, about the possible use of lacquer finish for floors, it is doubtful whether clear brushing lacquers have been on the market long enough for any comparative figures to be developed.

Speaking generally, it would appear that lacquer seems to have less body but a more agreeable sheen than varnish left in high gloss. It is possible to buy floor varnishes at so many different prices that a comparison on this basis would be of little value. Clear brushing lacquers would probably run a little higher than the average floor varnish, but the quick drying feature may offset this.

As to comparative durability it is a little too early to say. Some finishers affirm that a one-coat lacquer job is more durable than a two or three-coat job either of lacquer or varnish, but this may be only individual experience. All clear lacquers, like varnishes, are not alike in makeup so that to be specific, it will be necessary to set product against product.—I. F.

In reply to A. H. C. & Co. in February issue, I find lacquer is being used for floors more and more every day. The cost of lacquer will no doubt be a little higher in first cost. You will get a body quicker than with shellac. Although lacquer dries nearly as fast as the shellac, the lap will not show as in shellac.

In appearance, you will obtain a gloss equal, I believe, to varnish and a harder, more durable surface. This material must be thinned for the first coat and

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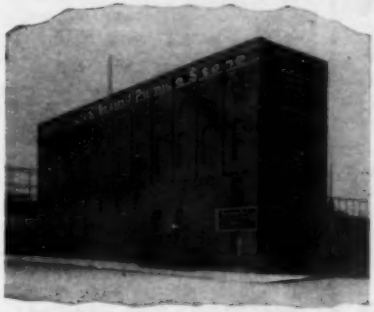

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worked fast with a large oval brush not carrying too wide a stripe. It is my experience that it will cover a surface equal to varnish.—J. K. C.

Floor Crack Filler

Replying to O. M., who asks, in February issue, for a crack filler for floors, will say that the silex filler, which was tried, is designed for pores rather than cracks. The best article for your purpose is a water putty on the order of plaster paris to which whiting, dextrine and glue may be added, to retard the drying. Such a filler is obtainable in various forms, under brand names, from practically any paint or wood finishing supply manufacturer.

If the wood is very dry it is advisable to trim it out smooth first, then moisten the interior with water in order to avoid the shrinking which may result from the moisture in the putty being sucked up prematurely by the fibres.—I. F.

A good floor crack filler can be made from plaster of Paris, whiting, varnish, linseed oil and dryer. Take plaster of Paris and whiting equal parts: Mix in varnish until you have a thick, stiff, putty-like mixture. Add a small amount of oil and dryer according to the amount mixed. This is now ready for pressing into the cracks. This mixture will form a very hard filler which will require a light sanding after it is pressed into the cracks. This does not shrink, as do some patent fillers, and it will not check out. Cornstarch does not make a good filler, as it shrinks and does not dry hard.—J. K. C.

Brushing Lacquers

It is only recently that there has been developed several brushing lacquers both clear and colored. These brushing lacquers, I believe, have been made and are advertised chiefly for non-industrial use, but it requires considerable skill to apply them to make a neat clean job. While this pigment works freely under a brush, it dries so rapidly that the average household user experiences some difficulty in using the lacquer.

This brushing lacquer, however, should be an advantage to any industrial establishment that isn't equipped with a spray outfit, as it dries in half an hour; this enables the finisher to put on two or three coats in one day.

Brushing lacquer must be flowed on and only rubbed enough to prevent sags and runs. Care must be taken with the edges as brushing the second coat may cut these to the bare wood; also one must be careful to prevent runs going over the edge and forming hard lumps which can be removed only by sanding down to the wood. Any kind of a good rubber-set brush can be used for brushing lacquer. The brush

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must be washed clean in thinner after use.

Unlike spraying lacquer, which must have a clean surface free from paint or varnish, this brushing lacquer can be applied over any hard surface of old paint. Cheap varnish, however, will crumple up under it, therefore, in this case the varnish must be cleaned off, or covered with a coat of lead paint, applied as a first coater and allowed to dry hard.

Stippling, decorating, etc., can be done with this lacquer, by using a special reducer that slows up the drying, or lead or japan colors may be used, followed by a coat of clear lacquer. This must be applied with considerable care, as otherwise it pulls up the undercoat and cuts the edges. Within the next few months, I believe every paint maker will be producing a brushing lacquer.

Although this material is costly at present, there are possibilities of a great saving in the work, owing to the fact that lacquer dries so much quicker and is so much harder (withstanding harder usage, too) than ordinary enamels.—J. K. Cooper.

Bleaching Wood For Refinishing

Stains which occur in wood surfaces that are to be refinished, are mostly caused by weather and water, but there are other causes, such as alkali, aniline, or other pigment stains, and stains from iron rust or other deposits. Some stains are almost impossible of eradication. They will come through almost any coating that may be applied as a finish.

Soft woods, like white pine and other close-grained woods, stain as well as the harder woods, and the treatment in both cases is

essentially the same. The hardwoods, such as have been stained by exterior exposure and by alkalies, are difficult to bleach in proportion to the amount of tannin they contain. These woods are oak, mahogany, cypress, birch, cherry, chestnut, walnut, ash, etc., all of which contain some tannic acid. Sappy or white woods are the most easily bleached. These embrace such woods as pine, spruce, hemlock, whitewood, poplar, maple, basswood, gum, etc.

An expert on bleaching advises the removal of all the old finish, clear down to the bare wood. Care must be exercised in doing this, that no waxy or greasy matter be left on the surface, in which case a final washing off with sal-soda solution or alcohol is necessary. This is done that the bleach may have free access to the bare wood. Then, as all methods are based on the use of water-soluble chemicals, the result is that the wood sponges up, or becomes soft, and the fibers lift.

Then it is explained how a tank may be used for bleaching small articles. He suggested a porcelain-lined tank as most suitable, though any other tank that has no nails in it, or iron parts, and which has its joints sealed with white lead putty or casein cement, would do.

The bleaching fluid for ordinary weather stains may be made with a pound of oxalic acid and 1½ gal. of hot water. For removing a deeper stain the addition of strong white vinegar or acetic acid is indicated, and the bleach is made as hot as possible. Repeat applications as often as necessary. After bleaching wash thoroughly with clear water, followed by a wash-off with vinegar.

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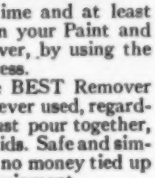

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For aniline stains apply a strong solution of chloride of lime, followed in a short time by a wash-off with clear water, and this in turn, by a wash with oxalic acid water. Then, should the stain not yield, follow with a solution of tartaric acid or diluted hydrochloric acid, or a solution of citric acid. For urine stains use the method indicated for aniline stains.

Now, in refinishing such woods as have been treated for stains, don't sand the surface if it has to be filled or stained, as this will cause a spotted effect. Simply apply a very thin coat of shellac after an interval of 24 hours, or as much longer as convenient, sandpaper, and start the staining or filling, or whatever operations the finish requires.

The shellac will stiffen the fibers of the wood and permit you to sand it smooth; it will also fill any soft parts, and prevent the stain from making spots there. Some finishers prefer steel wool to sandpaper for this smoothing operation.

To prevent aniline stain from coming through, when it is not desired to remove it, take one pound of green copperas (ferro sulphide) and dissolve it in from one to two gallons of hot water. Add about half its quantity of alum and apply one or two coats. —A.A.K.

Solving That Problem

Suppose in your department there is something out of joint; a certain machine may be troubling you. The operator is at a loss; you yourself have not the remedy. You may have probed every avenue in your shop, every possible means, yet the problem is unsolved.

Have you hazarded the other plants?—what might not the executives over there not be able to do for you. Have you submitted your problem to others through the columns of INDUSTRIAL FINISHING? Indeed, they may have encountered the same difficulties and overcome them; everything is now bright and rosy.

Thus, let us find out! Assuredly there is some one man, in some shop who can help you out of your trouble, and he will do that gladly. So far as the machine is concerned, in this hypothetical instance, he may point out how to better care for it, how to get more and better work from it, and that more speedily. He can show you how to reduce its depreciation, and generally suggest attention and operation promising greater dividends in various ways.

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Wm. Zinsser & Co., Inc., Will Move Offices

After 77 years at 195 William St., New York City, the offices of William Zinsser & Co., the oldest shellac manufacturers in the country, with factories at New York and Chicago, are to be moved to midtown New York, at 516 W. 59 St.

This move amalgamates the executive offices with the factory buildings, garage and warehouse on the large plot of land west of Tenth Ave. between 58th and 59th streets, which William Zinsser & Co. has owned for upwards of 60 years.

On about May 1st, the top floor of the modern and concrete warehouse facing on 59th St., with windows on three sides and a floor capacity of 4,000-sq. ft., will be occupied by the offices of the corporation. The contract has been let, and invitation is issued to all William Zinsser & Co's. friends to visit and inspect their modern offices.

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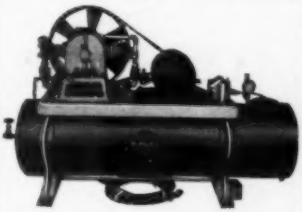

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